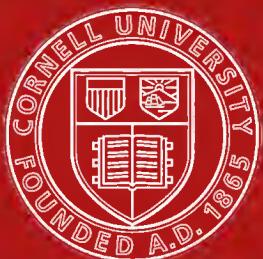


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EURHYTHM THOUGHT IN ACTION

THE PRINCIPLES AND PRACTICE OF
VOCAL AND PHYSICAL THERAPY

DESIGNED FOR THE USE OF
TEACHERS AND STUDENTS OF VOCAL AND PHYSICAL EDUCATION

BY

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EXERCISE FOR HEALTH, BREATHING FOR VOICE, NATURAL PHYSICAL REMEDIES IN THE TREATMENT OF DISEASE, VOICE TRAINING IN SPEECH AND SONG, ETC., ETC.

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MADE IN ENGLAND.

TO THE MEMORY OF THE LATE

W. G. McNaught, Mus. Doc.

Who not only took a lively practical interest in the subject of Eurhythm, but whose cheery smile and words of encouragement were potent influences in the overcoming of difficulties that obtruded and seemed at times almost insuperable, especially in the early days of the work.

PREFACE.

EURHYTHM—a wonderful term signifying perfect harmony—

“ From Harmony—from Heavenly Harmony
This universal frame began ;
From harmony to harmony
Through all the compass of the notes it ran,
The diapason closing full in Man.”

Heavenly Harmony of Mind and Action, of impression and expression, is the poetry of movement and of life. It includes principles that should animate life itself and all forms of education, mental, physical, and artistic. It produces character, spirit, soul, a something even higher than mind. It embraces the simple love of beauty for its own sake, the ideal upon which the vigour of the ancient Greek mind and body depended, as opposed to the material love of gain and might, which led to the downfall of the powerful Roman Empire. It develops national character by producing spirit by “thought” and right by “thought in action” as opposed to the creation of intellectual superiority by educational cram, and might by empirical physical training.

“ Thought in action ” makes individuals intellectual units, whereas empiricism turns individuals into machines. “ Thought in action ” is the one and only way of getting that harmony of mind and body that is indispensable for artistic movement.

“ She was a phantom of delight
When first she gleam’d upon my sight,
A dancing shape, an image gay,
To haunt, to startle, and waylay.

I saw her upon nearer view
A spirit yet a woman too,
Her household motions light and free,
And steps of virgin liberty ;

And now I see with eye serene
The very pulse of the machine ;
A being breathing thoughtful breath,
A traveller between life and death,
The *reason firm*, the temperate will,
Endurance, foresight, strength, and skill.”

Dance, song, picture, language, and music contribute proportionately to the eurhythmic setting of a musical play, but all must conform to the law of co-ordination and to the laws of harmony and colour. The theme, the illustration, and the climax of the opera, the poem, the dance, and the picture, co-ordinated by the eurhythmic spirit of simplicity, represent the art of a healthy nation.

Eurhythm has a power through its production of character and spirit, and by its training in clear thinking (in the words of Sir Clifford Allbutt) "to nourish the centre of creative life and action—the imagination."

Eurhythm is all-powerful in that by thought it raises action from the low nervous level of reflex action to the high nervous level of full consciousness of action, by simple yet scientific and artistic methods—by a system of thoughtful breathing and physical movements—in which the purposeful outcome of a full understanding is the dominant factor, beginning with simple, thoughtful breathing and physical exercises, leading on to the complicated, thoughtful movements in accomplishments (games of skill, the accomplishments of painting, singing, and dancing), and the gradual but certain development of the true sentiment and artistry which by its co-ordination of mind and body produces the "life and spirit" of character.

Probably the most practical idea of eurhythm is to be obtained from studying the conductor's beat, which is best described by a slight alteration of a quotation from "Hamlet": "What a piece of work is a conductor's beat! How noble in reason! how infinite in faculty! In form and moving how express and admirable! In action how like an angel! In apprehension how like a god!" Rhythm in movement is music to the eye, just as rhythm in sound is music to the ear. Both are dependent upon sentiment: reason, faculty, and apprehension—as well as artistry—express admirable and angelic action.

The principles of eurhythm include the science of appreciation, the conception of the beautiful, the art of expression, and the laws of movement (co-ordination, balance, movement-feeling, continuity, physiological poise, and tonicity). The practice includes exercises for tone in health, voice, and physique, and breathing and physical remedial movements for the recovery of tone in health, voice, and physique. It includes, therefore, the principle and practice of vocal and physical therapy.

The theories herewith advanced are the outcome of practical work carried on for years before the War in connection with the vocal therapy (of, roughly speaking, a thousand voices each week) of L.C.C. teachers, and during the War in connection with the physical therapy (of, roughly speaking, a thousand disabilities each day) of injured soldiers. The work, begun in 1911, was finished in 1921, and every point has been carefully thought out and well deliberated upon, and carefully expressed. It is the ardent wish of the author that it may form a text-book for the serious student of voice and physical training, and lead to more scientific researches and healthy work in both vocal and physical therapy.

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August, 1921

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CHAPTER I.

THE DEFINITION OF EURHYTHM.

Perhaps the simplest translation of the term "Eurhythm" is "well-doing." It is an art, but the quality of doing is of such vital importance, that Eurhythm becomes a science as well as an art; the science is engaged in the analysis and teaching of the essentials of the qualities contained in the word "artistic." A performance or "doing" does not become a "well-doing" unless it is truly artistic. Anything unreal or artificial is foreign to "Eurhythm." Every finished artist is "Eurhythmic," whether he is an exponent of accomplishments, or of games of skill, or of skilled labour.

It may be said to be a universal subject, in that it forms the true and scientific basis of all expression and even of impression, since impression can scarcely be said to be complete without expression, and it is almost impossible to separate the one from the other.

Eurhythm really includes the art of living, the art of education, the art of acting and of all artistic performances, and the art of action in all skilled labour and in games of skill.

Thought in Action.

The one outstanding feature of the finished action of the artist is the prominence of thought in that action; such a projection of mind into movement, that it gives intellectual delight to the onlooker.

The form of expression used so conforms to the impression that prompts it, that the mind and muscle of the artist seem to be one piece of mechanism harmonious in purpose and in action.

It is not an easy matter to give a thoroughly comprehensive definition of Eurhythm, because it is impossible to express in words the subtlety of the effect of thought upon action. The only word that seems to suggest at all the reason for the finish given to artistic movement, is intellectuality, and even to that term it seems necessary to add the word "inspired." "Well-doing" means an inspired intellectual action, that is, *an intellectual expression of a cultured impression*.

The Science of Impression

and

Expression.

Science makes this clearer and demonstrates the impossibility of separating the physical from the mental, the body from the mind, expression from impression.

Many impressions arise in the outer world and reach the mind through the body; some begin in the body itself. All expressions of the mind reach the outer world through the body, except in the very rare cases of transference of thought.

This can be explained simply by a diagram, in which (1) a curve represents an end plate, (2) a line—connecting the end plate with a cell in the spinal cord or brain—represents a nerve, (3) a cell represents a nerve cell. The end plate is affected by impressions, the nerve conveys the affection as a nervous impulse to the nerve cell, which changes it into meaning. The nerve cell communicates with a different kind of nerve cell, which changes the meaning into action; this action travels down another nerve again as a nervous impulse to an end plate situated in muscle, which moves in answer to the motor impulse. The part of this nervous mechanism ending in meaning is impression, the rest of it is expression.

THOUGHT CELL.

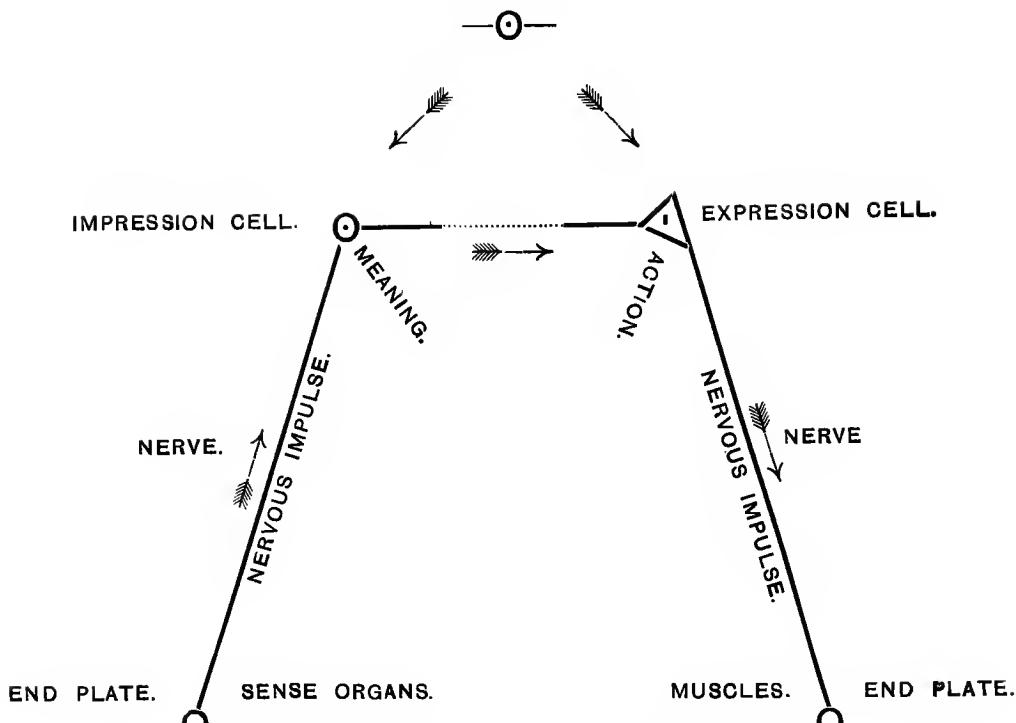


FIG. I.—DIAGRAM OF INSPIRED INTELLECTUAL ACTION.

**The Nerve Cells
of Impression,
Expression, and
Thought.**

The cell of impression is represented in the diagram as a circle with a dot in the centre and a tail; the cell of expression as a triangle with a dot in its centre and a tail. The joining of the two tails forms a path of communication between the two cells, and a complete circuit is made from one end plate to the other end plate. In physiological language this is called a "reflex arc," and is actually the mechanism

that is brought into play when a reflex action is performed, such as the rapid removal of a finger from a utensil which is painfully hot. The heat affects the sensory end plate in the skin, and is conveyed as a nervous impulse by a sensory nerve to a sensory nerve cell, which changes it into feeling, the feeling passes to a motor nerve cell, becomes changed into action, which as nervous impulse is conducted by a motor nerve to a motor end plate in muscle, and movement takes place. It can be said that such an action is performed without thought, and therefore an addition must be made to the diagram to represent an action, which is influenced by thought. The thought cell may be represented by a circle with a dot in the centre and two tails. The introduction of the thought cell into the path of communication between the sensory and motor cells makes all the difference. The thought cell can influence the quality of the action that is set up in the motor cell. The physiological name for the thought cell is the "association cell"; the psychological function of the association cell is the storing up of impressions—it somewhat resembles a pigeon hole containing information derived from former impressions of like character. This in plain language signifies experience. A teacher possesses a larger experience of the subject than the student; his intellectuality is the result of the accumulation of experience and the use made of the fund of knowledge thereby acquired. It is easy from this description to understand that the difference between an action and an intellectual action—that is, the difference between the action of the inexperienced and that of the experienced—is due to the *modification introduced into the movement by the thought cell*.

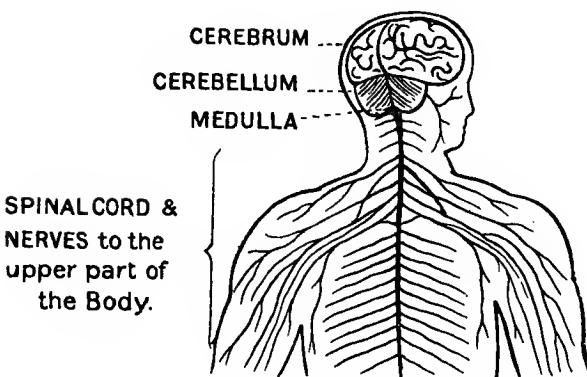


FIG. 2.—THE CEREBRO-SPINAL SYSTEM.

Consists of : 1.—The Large Brain (Cerebrum); 2.—The Small Brain (Cerebellum); 3.—The Junction of the Spinal Cord with the Brain called the Medulla ; 4.—The Spinal Cord; 5.—The Nerves. One of the twelve pairs of Cranial Nerves and twenty of the thirty-two pairs of Spinal Nerves are shown in the diagram.

The Practice of Physiological-Psychology.

Eurythm is the practice of the up-to-date physiological-psychology, which states that man is a very complex piece of living nervous mechanism, consisting of millions of sensori-motor arcs. The arcs are controlled, consciously or subconsciously, by the highest nerve cells—cells contained in the highly developed nervous structure forming the covering of the brain, called the *neo-pallium* or new covering (for it is the last to appear in the order of development). In the diagram of an inspired intellectual action, the impression followed by the expression represents a sensori-motor arc, the impression ending with the sensory cell being the sensory part and the expression beginning with the motor cell being the motor part. The sensory part makes the body aware of the impression, and the motor part by its response gives expression to the awareness or consciousness. The sensori-motor arc consists of two complete halves, which are so disconnected that almost any sensory impression may arouse almost any motor expression. This arrangement allows of an infinite variety of combinations of impressions and expressions.

The Thought Cell.

The interposition of the thought cell between the sensory half and the motor half influences the response to the stimulus to such an extent, that the expression may be so disproportionate to the impression as to appear to be unreasonable. Note the effect of jealousy or misunderstanding; clearly the work of the thought cell upon the reply to a stimulus given in quite a friendly spirit; or the effect of self-control upon the response to a markedly unfriendly stimulus. The thought cell can intensify, nullify, or retard the expression of any given impression. An action of revenge may be made years after the unpleasant incident occurred that prompted it. Those who have ever taken part in amateur theatricals will appreciate the influence of the thought cell upon expression; the conduct of the players is so keenly susceptible to the influences of their emotions, that even paltry impressions become the cause of angry discussions, and lead to the inevitable threat of throwing up the part. Many, whose self-control is usually good, seem to lose much of it during the rehearsals, so unpunctually and poorly attended, but in spite of all drawbacks appear to be fully convinced that it will be all right on "the night."

Conscious and Subconscious Action.

The order of a conscious action is to feel a certain impression, to think it over, and finally to will the response or expression. If apparently no thought is expended upon the action, it is said to be unconscious, subconscious, automatic, habituated, mechanical, or reflex. A living action cannot be mechanical, it must be a response to a sensation, for sensation is the basis of life; and if there is sensation there must be

consciousness. The automatic actions of the living body are those vital processes that work regularly even when the brain is resting. Breathing, the beating of the heart, and the vital functions generally, are carried on in an orderly manner by their special controlling nerve-centres even while the individual is asleep. A sensori-motor or reflex action—that is, an expression of an impression—becomes habituated when a definite expression is made to follow a definite impression so frequently that it can be done without thought—that is, without conscious thought. It is more scientific to call this a subconscious action, because there must be some controlling influence at work in a truly artistic action, conscious or subconscious.

**Self-
Control.** Another and simpler name for Eurhythm is self-control, that kind of self-control possessed by the most perfect exponents of games of skill, the self-control that enables them to put into play the masterly strokes that are the envy of all learners and an exhilarating joy to all beholders.

Everyone admits that continuous, patient, and intelligent practice is necessary for the acquirement of perfect results; but too many insist that champion players possess at the outset great gifts, gifts sparingly but lavishly bestowed upon the few by Nature and denied to the many.

That an artistic temperament is necessary for the accomplishment of artistic work cannot be denied, but however great that artistic temperament may be, it is practically of little use unless it is carefully developed by efficient systematic culture.

While everybody is willing to believe that an artistic temperament can be developed by practice, few are inclined to think that by scientific movements an artistic temperament can be acquired.

**Nature's
Endowment.** Nature's endowment is originally little more than a bent towards a certain accomplishment, a yearning for enlightenment in a particular direction, or a special aptitude in the performance of executive actions.

The special bent and yearning demand intellectual instruction, whereby a thorough acquaintance with the underlying fundamental principles is acquired. The aptitude demands efficiency in movement. This can be summed up in the two words, intellectual action.

The artistic temperament is undoubtedly of great utility if properly used, but is answerable for much mental pain and anguish if not kept within reasonable bounds. There are, at the present moment, many artistic temperaments eking out a miserable existence in poor surroundings, lamenting the supposed fact that the rest of humanity are too dull-witted to recognise their talents. They cannot realise that their artistic temperament is the cause of their failure, through its interfering with that adaptability to work which alone would make them a success in life; it cannot be said that the artistic temperament and steady work are synonymous terms. Persistent and intelligent daily work is capable of overcoming almost insuperable difficulties; emotional outbursts of energy may be showy, but it is the steady work that tells. Many possess a valuable artistic temperament, which remains more or less latent until they have overcome by hard work the special difficulties that prevented them from having the adequate means of expression. This is the work of Eurhythm.

**Intellectual
Action.** Intellectual action possesses the greatest educational force. The aim of education should be to make men and women most useful members of society—that is, as accomplished as their respective bodies and minds will allow. It is impossible for anyone to be perfect, that is, to the maximum of their power (100 per cent.); if education could be so conducted that students could acquire 60 or 70 per cent. of their power, how accomplished the nation would become!

Every movement of the body is made by the contraction of muscles; a skilful movement consists of a perfect co-ordination of the different muscles engaged in that movement. This co-ordination can only be acquired by assiduous practice, as is seen by the number of hours daily devoted to the practice of a game of skill. There is no royal road or short cut to the

goal ; the grace and elasticity of movement of the skilful performer are the outcome of steady work in overcoming obstacles. The same is true of dancing ; many hours of daily practice are necessary before poetry appears in the motion, which is the outcome of a perfect poise of muscular action. By co-ordination in movement intellectual action is produced.

Capacity for Taking Pains.

The educationist's definition of genius as "an infinite capacity for taking pains" is a definition that can be much more truly applied to the artist, and seems to be the explanation of the marked success of the self-trained man, whose motive is strong enough to ensure such an infinite capacity for taking pains that he does not hesitate to work unceasingly and persistently in overcoming the obstacles that bar his way to success. His determination is strong enough to enable him to take the requisite amount of pains to perfect one after another the movements belonging to the foundation of his subject ; he does not grudge the time or trouble spent in mastering the essentials of his art, and is not satisfied with anything short of perfection.

The chief trouble of the trainer is to get the student to understand the necessity for paying intellectual attention to the detailed performance of the essentials, and to practise assiduously enough to master the difficulties completely. Students are too much given to underrating the value of essentials, and to hustling in a flighty manner to showy effects at the top before they have any secure foundation at the bottom ; hence the building of the trained is too often unstable and unfinished from the absence of a solid foundation.

The self-trained suffer from want of expert advice as to the right essentials and the method of mastering them, and often work very hard in the wrong direction. The successful find out for themselves by experience what is the right method of procedure, but that experience is often very bitter, owing to the following of a mistaken path from want of guidance. Their motive will not allow them to faint by the way ; they find the right path eventually, and then nothing can stop their progress.

The expert trainer is the guide to the right path, and the instructor of the best methods to pursue in moving along that path. Fortunate the trainer and student who work together in that harmony of purpose whereby the best results are obtained in the best way—a combination of strength that is mostly conspicuous by its absence. Failure of efficiency in the guidance of the trainer, or of the capacity for taking pains in the student, mars the result to such an extent as to give the self-trained man, with all his drawbacks of inexperience, the lead in the race of life, owing to his infinite capacity for taking pains and to his strength of motive.

The Finished Artist.

Compare the expression of (1) the finished artist, (2) the fascinating (but not necessarily powerful) artist, and (3) the good (but not necessarily powerful or fascinating) artist. It will be found on analysis, that there is a difference in the expression itself, over and beyond the effect of that which the impression necessarily has upon it. The difference is quite obvious, and is easily observed if requisite attention is paid to it, and that difference is in the finish, hence the term "finished artist" ; the movements are so complete in themselves that they show clearly the meaning of the intention. This difference is perhaps more easily observable in the players of games of skill ; the best batsmen are those whose movements are the most finished.

The Practice of Eurhythmics.

The first step in the practice of eurhythmics must necessarily be a means for getting the body elastic. Stiffness or rigidity is antagonistic to intellectuality. The crude, forceful, ponderous movement of the unskilled labourer appears markedly inefficient when contrasted with the masterly movement of the trained mechanic. Efficiency in movement is getting the maximum result with the minimum amount of exertion, and is the outcome of continuous intelligent practice. Exercises of which the purpose is thoroughly understood must be practised daily, while the mind is kept fully engaged in the work, so that thought is brought into the action from the outset.

The "Swing." An analysis must be made of the complicated strokes that constitute a game of skill, and each stroke must be reduced to its component parts until the simplest fundamental movements have been discovered and carefully studied as to purpose and effect. Each of these movements must be intelligently repeated until they become so habituated, that they can be performed without conscious thought. These habituated movements, stored up in the subconscious area, are ready to form components of the complete stroke, when called upon by the player. If the habits are correct the stroke will be finished. A practical word that seems to suggest what is necessary in movement is "swing." The first exercise for obtaining that masterly command over body, so that it responds to the mind, is the "easy swinging" of the body and limbs without any jerk or undue effort.

For voice and health purposes the movements of the trunk are much more important than the movements of the limbs, and it is advisable to begin with trunk movements, exercises of the chest and the abdomen, consisting of a swinging of their walls. Swinging the chest walls sideways, first outwards and then inwards as easily as possible, allowing the air to enter noiselessly through the nose as the chest wall is moved outwards, and to be noiselessly emitted through the nose as the chest wall is moved inwards.

Swinging the front abdominal wall inwards and outwards as gently as possible, avoiding a tensing of the abdominal muscles, which will cause pain.

The daily repetition of these exercises, carefully performed, while due attention is paid to the character of the movements, will produce in time an elasticity of the trunk which is absolutely essential to health and to all accomplishments.

The real principle in practice, that should be observed, is getting control over the fundamental movements—that is, making the expression coincide with the impression—progressing by easy stages from the simplest form of control of the simplest movement to the control of the most complicated movements that are required. No time should be wasted upon any movement that has not a decided bearing upon the desired result. The more direct and the more simple the movements the more certain is the chance of success. The successful self-trained artists always approach their goal by the more direct route, whereas trainers are too much given to seek circuitous paths and byways.

The chest walls and the front abdominal walls must be made to swing to order as follows: Make the chest wall swing outwards a little way, and let the distance covered by the movement be a measure for two more outward swings of the chest wall; let the air enter noiselessly through the nose while these movements are executed; and then, opening the mouth wide, let the air escape noiselessly through the mouth, while three inward swings of the chest wall are made exactly equal in length to the three outward swings.

Make the front abdominal wall swing in and out at first slowly, and then gradually increase the pace until the swing is executed as quickly as possible.

These last two exercises are a progression on the first two.

CHAPTER II.

THE ENGLISH PHYSIQUE AND ARTISTIC MOVEMENT.

The English physique has been acquired in the past from the national love for games of skill played in the open air. The skilful player possesses a muscular development which is so subservient to his mind that finished action follows immediately upon the conception of the intended movement. He possesses such a well-balanced neuro-muscular apparatus that the antagonistic muscles, so far from hindering the movement, assist the movement by balancing the part of the body that is moved. The professional, in teaching the different strokes that make up a game of skill, gives most of his attention to the cutting out of antagonistic forces, in order to get the requisite grace, ease, and finish that belong to skilful action.

The Science of Games of Skill. The science of the process is as follows: A full appreciation of the desired movement is formed by the highest nerve centres of the player, and his attention is concentrated upon the character of that movement.

The player has a definite impression in his mind of the picture of the movement itself and of the quality of the movement; his intention is to express himself in such a manner that his actions are in perfect harmony with his thoughtful impression. The expression is effected by the neuro-muscular apparatus (the expression cells and the nerves leading to the end plates in the muscles). The expression cells (motor-nerve cell) send off motor-impulses along the motor-nerves to all the muscles that take part in the movement, to those muscles which actually make the movement, and to those which antagonise the movement. The resulting action is at first stiff, ungainly, clumsy, forceful, and tiring, and has to be carefully corrected until just the right amount of energy is directed to each of the muscles engaged; then the opposing forces are so beautifully balanced that co-ordinate movement results, and the maximum result is obtained by the minimum of effort. The clumsy, energetic movements of the tiro are due to the using of too much antagonistic muscular force.

The right form of movement having been acquired, it is persistently practised until it becomes so much a habit that it can be performed almost subconsciously, when it may be said to become an accomplishment of the individual. A player becomes an accomplished player when he has absorbed a number of these habitual movements. The movements are eurhythmic when the neuro-muscular apparatus of expression harmonises with the full appreciation of cultured impression.

The expression cell and its nerves must be quickly responsive to the impression cell, so the organs of expression—the muscles—must consist of that special kind of fibre that responds most readily and efficiently to the nervous impulse, and the parts of the body that are moved by the responding muscles must move easily and gracefully.

An elastic bodily framework with flexible joints and fine fibred muscles is absolutely essential to all accomplishments. The slightest stiffness is a hindrance to graceful action. The coarse muscular fibres hampered by the strong fibrous sheaths of bulky hypertrophied muscles sluggishly respond to the will, are clumsy in action, are easily fatigued, and have poor recuperative power; whereas the well-shaped finely-fibred muscle of the athlete is most responsive, is elegant in action, has great powers of endurance, and is very recuperative.

Co-ordination is the vital principle underlying all effective movement as opposed to the antagonism of crude movement. The maximum result should be brought about by the minimum of effort as opposed to the minimum result by the maximum of effort. A good name for efficient movement is artistic movement, as it is the intelligent action belonging to all accomplishments, and represents what is meant by eurhythms. The novice always uses too much force, the controlled performer uses just the right amount, and the result is so proportionate to the force used that the action appears to be almost effortless. It is always instructive to watch mechanics at work, there is such a marked difference between the jerky violence of the apprentice and the steady pull of the master-man. The apprentice obviously suffers from want of knowledge of mechanics (appreciation), and through the over-exertion used often seriously damages the mechanism. The educated mechanic examines the machine, making use of his past experience, and having thoroughly appreciated the condition of affairs, and having duly reflected upon the purpose to be attained, quietly but firmly puts into play just the amount of effort that is necessary to effect that purpose. The action becomes at once purposeful, masterly, and smooth: that is the intelligent action of eurhythm.

Elasticity of Body of the science of appreciation and the art of expression. Appreciation and Joints. determines the purpose, expression regulates the character of the force.

Intelligent action is the mentally controlled movement of an elastic and responsive body, for a clumsy, stiff body cannot respond adequately to the well-thought-out intentions of the mind. The first step to take towards intelligent action is to strive for an elastic framework. Elasticity is a term used to express a very desirable quality in a motor engine, and is accountable for the smooth, silent, effective, and rhythmical running of the best cars. The cumbersome noisy work of crude machinery is done at the expense of the parts, which rapidly wear away and have constantly to be renewed. Ball-bearings reduce the friction, and consequently add to the life and smoothness of running of the machine, just as an elastic joint adds to the efficiency of intelligent action. The elasticity of wrist-play and of other joints, so noticeable in the movements of the Hindus, added to their quickness of sight, gives them great advantages in the playing of games of skill. "Ranji's" elastic joint movements in cricket will always be remembered as a most artistic performance. Flexibility of the bodily framework gives such an elastic envelope to the vital organs contained therein, that it cannot fail to be conducive to the health of the body by promoting harmony in action which is so prominent a feature of eurhythms. How can the lungs work properly inside a framework of bone, cartilage, and muscle which is cumbersome and rigid? Inasmuch as air is made to enter and leave the lungs by movement of the chest walls, "it must follow as the night the day," that elastic, smooth, easily responsive movements of the chest-walls by well-controlled muscles, acting through elastic joints upon the bony and cartilaginous framework, must add tone to the action of the lungs, must increase the quantity of oxygen—the elixir of life—in the blood, and must rid the blood of the poisonous waste-products so detrimental to health. The heart cannot be expected to work well inside a hefty framework. The same applies also to the abdominal walls.

Over-Exertion and Hypertrophy. The overcoming of too great resistances and continuous over-exertion are the chief causes of the dyspepsia engendered by the playing of games; and constitute the reason why the record-breakers so often suffer in later years, or die before they have reached their allotted span.

Muscles overworked become hypertrophied, and if the overwork of the hypertrophied muscles is still persisted in, they begin to degenerate, a great step in advance towards their final decay.

The slow-acting hypertrophied muscles must hamper the delicate actions of the enclosed vital organs, and interfere with the "fitness" or harmony of the living machinery. In the training of the body for athletic competitions too little regard is paid to the character of the resistances to muscular movement and its relationship to fatigue; over-fatigue and over-exertion being responsible for the hypertrophied heart and abdominal muscles so much in evidence in rowing men, with their attendant evils. Less over-fatigue during training, more regard to the laws of movement, daily eurhythmic breathing exercises, and a more liberal and varied dietary, would surely prevent much of these troubles, and add to the pace of the boat as well as to the health of the crew.

Co-ordination in Movement. Co-ordination in movement is that harmonious muscular action whereby the different kinds of muscles that take part in the movement contribute their proportionate share of work to that movement.

Muscles work in groups, and each muscle of a group has its particular work to do—overwork or underwork of any of them mars the movement. In any movement many groups of muscles are engaged, three of which must be described. There is the group (1) that actually makes the movement, and directly opposed to this is the group (2) that antagonises the movement, and lastly, there are the various groups (3) that may be said to be auxiliary to the movement. Thus there are the acting, the antagonistic, and the auxiliary muscles. Each group and each individual member of a group must work in perfect harmony one with the other—as do the members of a racing "eight," who after weeks of careful tuition become so uniform that they appear to be as one man, and are said to be a perfectly rhythmical crew. Not only is the time of their blades regular, but their swing and body work are in exact time, so that each member gets the maximum of body work on to his oar at precisely the same moment, and by a prolonged leg-drive keeps his body weight steadily poised so that the blade, which is only just covered by the water, is pulled straight through to the end of the stroke. The boat rides smoothly upon an even keel, and although it is lifted at the beginning of each stroke there is a noticeable absence of jerk. Just as much attention is devoted to the swing forward of the body in preparation for the next stroke. This must be smooth and graceful, devoid of jerk and rush, otherwise it will interfere with the pace of the boat. There are many other important details that have to be attended to (the timing of the slides, the reach of the body, the position of the arms). It takes quite three years' intelligent practice to attain to anything approaching perfection in rowing, the majority of first-rate rowing men at Oxford and Cambridge having represented their school in rowing before taking up their residence at the "Varsity." How does rowing compare with eurhythmics? First and foremost is the necessity for purpose in action, the successful rowing coaches being men well steeped in the science of appreciation of the art of expression in rowing, and this experience and knowledge they bring to bear upon the preliminary instruction given in "tubbing" exercise, everything taught in the "tub" (a pair-oared boat) having a distinct bearing upon the results to be attained by the finished crew at Putney or Henley. Secondly, by the science of appreciation of the laws of movement means have been found whereby the maximum results may be secured by the minimum of effort. This is the co-ordinate or proportionate work done by the various groups of muscles engaged in pulling the blade through the water (principally the muscles of the back and the muscles of the legs) unopposed by their antagonists, with the auxiliary muscles doing the right amount of work to keep the body poised, so that it is kept in the best position for effective work. Co-ordinate movement is the kind most difficult to teach, takes quite a long time to conceive, and is almost impossible to describe. Eight men sitting in a boat, putting their blades into the water at the same time, but unevenly covered, bucketing forward together with rounded backs, and making a simultaneous "huck" in the middle of the stroke, may appear to the untutored eye to be rhythmical; they are more or less in time, and if a number of men perform the same kind of movement together, it is showy in appearance, even if it is badly done. Jerky, vigorous,

antagonistic movements in response to sharp words of command are the easiest possible movements to teach, and are unfortunately very showy. Smooth, masterly, and purposeful co-ordinate movements are most difficult to teach ; they are too real to be showy, and their beauty consists in their efficiency and their health-giving properties. They appear to be effortless, because they are harmonious, and there is absolutely no waste of effort ; every single part of the movement, whether active, antagonistic, or auxiliary, is helpful towards effecting the desired result in the easiest way.

Work of Antagonistic Muscles.

The chief part played by the antagonistic muscles in a co-ordinate movement is that of steadyng the balance or poise of the part that is moved. Over-action of antagonism makes the moving part rigid and stiff, resulting in clumsiness and effort. Putting the antagonistic muscles directly into opposition to the acting muscles makes the

movement appear to be vigorous, and the extra amount of resistance gives to the performers, through the sense of effort, a false feeling of well-being, whereby the body seems to be braced up because it has been stiffened by the opposing forces. The quality of the muscles developed by this means is very poor. They become coarse and bulky. The muscular development of co-ordinate movement is very refined, not necessarily large, but capable of doing much more work and possessing greater recuperative power. The amount of muscular work that is got through by a champion player in a day is truly astounding, and his muscles as a rule are by no means remarkable for their size. If large, bulky muscles are necessary for artistic work, why is it that navvies do not excel in games of skill and other accomplishments ?

Intellectual Physical Exercise.

The more intellectually developed the individual becomes, the more careful must that individual be, as to the kind of physical exercise that is taken. Lawn tennis seems to provide the type of movements that are most suitable for brain-workers. A large number of purposeful movements of intelligent action are taken in a very short time, and

most of the muscles of the body are exercised and drained of their waste products. The wonderful placing of the ball, skimming like lightning just above the net, and landing at the toes of the opponent, is absolutely devoid of antagonism in movement ; in fact it may be said that lawn tennis is a typical eurhythmic game. While the ball is in the air, the player has to make up his mind how he will return it, and if possible at the same time where he will place it ; and onlookers can easily see the intention of the player, and can judge whether or not the stroke was intended, or was only a "fluke." The mental control of the physical movements of an artistic player is beautiful to behold, for it is the intelligent action of eurhythm. Contrast this with the sudden quick jerk of a squad at drill in response to the shrill command of an enthusiastic teacher of physical exercises. It jars upon all one's idea of beauty because there is antagonism at work instead of harmonious action. There is a lamentable lack of real rhythm. While a squad is at drill, let a musician play some suitable melody, and note the change that takes place in the character of the movements made by the squad. Music is often played in a jerky manner in order to get the jerky results so much admired by advocates of drill ; this kind of music then ceases to be music because it is devoid of real rhythm. The pianoforte thumping of the accompanists of physical drill is just about as unmusical as are the voices of the drill instructors. It is one thing to mark the time in the impressive manner of a musician, it is quite another thing to damage the instrument by banging it. The musician will call forth impressive movement, that is to say, eurhythmic movement ; the unmusical will get the arhythmic, jerky, vigorous response of drill. There is too much evidence of this result in the dancing of Morris Dances. It is delightful to see children romp through a simple dance to a musical accompaniment artistically performed, but when the jerk of drill is introduced all the charm at once disappears. Jerk is absolutely foreign to eurhythmics. The joy of the intelligent interpretation of the meaning of the actions in a dance is just as great as the joy experienced in the movements of a game of skill. Drill effectively destroys the

enjoyment of any game, and there is great danger of the jerky, vigorous drill movements being introduced into the organized games of physical education. Children at play do not jerk, and a child that is really keen on play is a healthy child. Young animals do not rigidly march about the fields—they jump, run, and gambol. The jerky, vigorous stamp of the feet of bodies kept rigid while marching is untrue to nature and eurhythmics, and this unnatural artificiality in physical development is altogether unscientific and harmful. It is possible to be energetic without being stiff or without being flabby. There is neither stiffness nor flabbiness in the movements of the athlete or of the dancer, for they make use of co-ordination in movement, of the health-giving movement of the intelligent actions of eurhythmics; their movements are not antagonistic in character.

**Education
and Drill.**

In general education, the teaching of a subject is often so empirical that it amounts to a drill. A certain number of facts have to be dealt with, and although great care is expended upon the order of the presentation of the facts, too little attention is paid to the purpose of such facts and to their direct bearing upon the subject that is being taught, principles which should be clearly in evidence from the very start. Lucky indeed are the students whose instructor is capable of explaining the purpose of every detail of his method, of proving the absolute necessity for every one of these details, and of showing the direct relationship of each detail to the subject as a whole.

Students can reasonably be expected to take a keen interest in the overcoming of the inevitable obstacles one after another, when they are made to understand the purpose of their work and the relationship of the separate parts to the whole; whereas a system of cram for examination or inspection purposes must always be irksome and distasteful both to the instructor and the instructed, for it is a drill rather than an education.

**Physical
Education
and Drill.**

Although, theoretically, there appears to be a universal tendency to condemn drill as a means of education for the young, actually the drill exists under the name of education. Especially is this so in physical training. Merely calling a system "educational gymnastics" will not eliminate drill (however much it may be despised as a term in theory), even if such educational movements are said to embrace such high-sounding terms as recreative, remedial, and medical gymnastics, both with and without apparatus, and even organized games and dancing; for as to whether the actual teaching is education or drill depends upon principles, not terms. Although it is claimed that the educational gymnastics taught in our English schools are based upon strictly scientific principles, it will be found on careful investigation that those principles are the unscientific principles of antagonism in movement, rather than the scientific principles of co-ordination in movement which is the true basis of eurhythm and natural science.

Many performers working together in time is strikingly effective, even if the work is faulty, and the striking effect is most easily produced by jerky and stiff movements following the sharp ear-piercing command of the instructor, whose one aim is smartness and vigour, with the mistaken idea that it is productive of health.

**Scientific Basis
of Physical
Education.**

Games, with all their alleged drawbacks of one-sidedness, have stood the test of promoting general-usefulness better than any other kind of physical education, and it has been said again and again that England owes her greatness to her games. Why is this? Because the test of efficiency is skill, and a skill that does not tolerate rigidity in any form.

Flexibility may be said to be the bodily state necessary for the performance of games of skill, and the champions possess in addition such masterly control of their movements, and are so easy, graceful, and finished in those movements, that they make the game appear to the onlooker to be perfectly easy to play.

Flexibility of body and masterly, graceful, and purposeful control of movements should be made the basis of all physical education, which would become generally useful, and form an excellent foundation for all games, and its useful results would become evident in the individual as well as in the class. Physical education would then assist vocal culture and dancing, and all accomplishments and games of skill.

Discipline. Into the co-ordinate movements of accomplishments is projected the mind of the performer, and the interpretation of the work in hand is thereby made so clear, that the sympathy of the audience and the performer is in complete accord. Perfect harmony prevails, because a thorough understanding between them has been arrived at, so much so that the audience of its own free will gives itself up entirely to the mind of the performer. Real discipline is obtained, quite different from the false discipline so much believed in by those in authority, the outcome of the enforcement of irritating rules and regulations by threats and penalties. A voluntary response is so very different from servile obedience, and makes for happiness as well as efficiency.

Order and Disorder.

Although there is definite order in discipline, this order is sometimes so difficult to discover that there appears to be disorder in it, so much so that the somewhat contradictory term "the disorder of order" has been used. Order does not necessarily mean discipline. The child sitting at a desk in a schoolroom, holding his body upright in an unnaturally rigid position, having been told to "sit up," is in order; but it is impossible for that child to attend properly to the lesson in the rigid position that is maintained so long as the eyes of the teacher rest upon him. Real discipline prevails when the class voluntarily responds as a whole to the thoughts suggested by the teacher, so that the minds of the teacher and the taught are "at one."

Discipline of Games.

Perfect discipline exists in the playing fields. Watch a well-disciplined cricket team at work, and a realisation of what is meant by a voluntary response becomes easy of comprehension. The attention of the men in the field is so fixed upon the progress of the game that any one of them is quite ready voluntarily to follow any suggestion given to him by the captain, whose commands are often conveyed by the smallest of gestures. Such a co-ordinate and eurhythmic team always takes a lot of beating, because its work is so efficient; a similar state of affairs in a schoolroom must be productive of equally efficient work.

Both the captain and the team are well versed in the rules, and especially in the ground-elements of the game. They have implicit confidence the one in the other, and each expects the other to behave as an intellectual unit, and therefore to understand the purport of the command and to act upon it intelligently as well as obediently. A fieldsman alters his position in answer to a wave of the captain's hand because, in the opinion of the captain, the batsman is likely to send the ball in a certain direction, but the out-fielder is expected to use his own discretion in that new position, and immediately to move in the direction that the ball is likely to follow, directly he sees the batsman shape for his stroke. The fielder is at the right spot to receive the ball when it arrives, but it is quite a different place from that originally indicated by the captain, and yet he has voluntarily responded to his captain's wishes. Many a cricket match has been won by real discipline being carried out in the field. The principle of co-ordination is at work, for the intention of the captain—dependent upon his knowledge of the game and the powers of his team, especially of his bowler—is voluntarily made the intention of his team as a whole. The intellectual joy of eurhythmics is everywhere in evidence from the start to the finish of the game, for each unit feels that he has contributed his intellectual share to the result.

Rigid Discipline. Contrast with this an imaginary rigid discipline in the playing fields, based upon the principle of antagonism in movement, and think out the result, with each member of the team standing rigidly on a definite spot rigidly awaiting events in the most orderly fashion. What an inartistic picture, absolutely devoid of pleasurable joy, of intellectual appearance, and of efficient power.

Hygiene and Eurhythms. Hygiene, including the laws of movements, is the science, and eurhythms, or intellectual action, is the practice of self-control.

The practical scientific teaching of hygiene in all schools should include the teaching of the principles underlying the following subjects: physical education, voice-training, singing, reading, phonetics, and languages, as well as the laws of health. The practice of intellectual actions based upon these principles would produce a healthy harmonious functioning of all the human vital organs, and also increased intellectual activity.

Principles of Eurhythms. The principles of eurhythms include—*rhythm*, purpose, control, co-ordination, correlation, progression, and correction in action; and the following laws of movement must be strictly observed:—

- (1.) The law of "reciprocal innervation of muscle" (Sherrington's law) governs all muscular contraction (*i.e.* co-ordination).
- (2.) Every movement must be well-controlled, purposeful, and rhythmic.
- (3.) Every movement must aim for elasticity, beauty, and grace.
- (4.) Movements must be progressive, universal, and corrective when necessary.
- (5.) Special attention must be given to movements for breathing and voice, and for good position.
- (6.) The attention must be given to the work while it is being done, and the work must be fully understood from start to finish.
- (7.) There must be directness of purpose from the beginning to the end, which means that every movement taught must have a direct bearing upon the desired result.

Ten Minutes' Daily Practice. The daily practice of eurhythms for ten minutes has been found to be of the greatest possible value to the health of both body and mind. It must be clearly understood that all the principles of eurhythms must be duly observed while each movement is being done, so that correct habits may follow the frequent repetition of the intellectual actions. The actions in themselves may seem to be simple, but they are nothing like so simple as they look.

The exercises should consist of:—

- (1.) Breathing exercises for voice (thoughtful breathing).
- (2.) Euphonetics—voice exercises for tone and diction.
- (3.) Exercises for position.
- (4.) Ästhetic movements.
- (5.) Dancing steps (with and without the use of the skipping rope).
- (6.) Corrective exercises.
- (7.) Movements for tonicity.
- (8.) Breathing exercises for health (thoughtful breathing).

The study of voice should begin with the study of those principles that will create tone in health. This embraces the study of general physical education including the development of a fully flexible body. Special attention must be given to the acquisition of elasticity of the trunk, and of the articulatory apparatus, for even the slightest stiffening of these parts makes the voice hard and unmusical.

When the body has become fully elastic, it is in a suitable condition to respond to the dictates of the mind in the artistic way that the voice demands. This introduces the problem of vocal poise, and means the bringing of the physical forces necessary for the production of voice under the direct control of the will.

Elasticity of the body is the first essential, and mental control of that elasticity the second. The dual effect must be acquired by simple, direct, and methodical work. Flexibility should be the leading aim for a time, and the mental control should be introduced as opportunities arise.

The following scheme of ten-minutes' daily exercise was introduced by the author and Miss Margaret Alexander Hughes at the L.C.C. Training College for Teachers, Greystoke Place, London, and was very successful in every way.

SYLLABUS OF TEN-MINUTE DAILY EXERCISES FOR THE PURPOSE OF THE DEVELOPMENT OF HEALTH, VOICE, AND PHYSIQUE.

The scheme comprises exercises specially devised to secure elastic, well-controlled, and graceful bodily movements, arranged in six sections, named A to F.

One exercise at least to be taken from each section every day. The exercises marked with a star to be performed every day, great care being taken that the student concentrates the attention upon the work done.

The exercises in each section are arranged as far as possible in the order of their progression.

SEQUENCE OF EXERCISES.

- Section A. Breathing exercises.
- „ B. Arm and body movements (æsthetic arm movements).
- „ C. Voice exercises.
- „ D. Leg and body movements (dancing steps on spot and marching).
- „ E. Corrective exercises for figure.
- „ F. Arm, leg, and body movements (skipping steps).
- „ A. Breathing exercises.

SECTION A.—BREATHING EXERCISES.

- *1. Three short breaths in through the nose } 3 times.
„ „ „ out „ mouth }
- *2. An in-and-out movement of the abdomen quickly 12 times.
- *3. Nos. 1 and 2 combined, with mouth shaped in turn for "oo," "oh," "aw," "ah."
- 4. Breathe in through the nose (medium-sized breath).
„ out „ mouth „ „ „
- 5. As 4 with arms parting.
- 6. As 4 with arms sideways raising.

NOTES.—All the breathing movements, both in and out, must be done smoothly and easily and at an even pace; there must be absence of rigidity, jerk, and irregularity.

For fuller information on breathing exercises see the chapter which is devoted to breathing.

SECTION B.—ÆSTHETIC ARM MOVEMENTS.

- 1. First Arm Movement.
Arm raising and lowering to shoulder line (including alternate turning of head right and left).
- 2. Second Arm Movement.
Arm raising forward and upward, lowering sideways and downward.
Ditto alternate head movements.
- 3. Third Arm Movement.
Curved arm circling.
- 4. Fourth Arm Movement.
A combination of Nos. 1 and 2.

SECTION C.—VOICE EXERCISES.

- *1. Three short breaths followed by 3 "M" sounds ; singing in semi-tones from the middle F to middle D. (Movement same as No. 3, Section A.)
- 2. Ditto. 3 "oo" sounds.
- 3. Ditto. 3 "oh" sounds.
- 4. Ditto. 3 "aw" sounds.
- 5. Ditto. 3 "ah" sounds.
- *6. Prolonged (medium) breath followed by "M" sound sustained. A to D. (N.B.—Carefully use abdominal press in abdominal movement.)
- 7. Ditto. "oo" prolonged.
- 8. Ditto. "oh" prolonged.
- 9. Ditto. "aw" prolonged.
- 10. Ditto. "ah" prolonged.
- 11. Ditto. "oo," "oh," "aw."
- 12. Ditto. "oo," "oh," "aw," "ah," "ay," "ee."
- 13. Scale of C on "oo," "oh," "aw," "ah."

SECTION D.—LEG AND BODY MOVEMENTS. DANCING STEPS ON SPOT AND MARCHING.

- | | |
|---------------------------|----------------------------------|
| 1. Tapping step. | 7. Hop march with straight knee. |
| 2. Crosswise step. | 8. Scotch step. |
| 3. Eight-step round room. | 9. Polka march. |
| 4. Reel step. | 10. Barn Dance march. |
| 5. Hop march. | 11. Simple Dances. |
| 6. Toe and heel step. | |

SECTION E.—CORRECTIVE EXERCISES FOR FIGURE.

- *1. Trunk forward bend—Arms parting.
- 2. " " " Arms upward raise (palms downward).
- 3. " " " 1 and 2 in succession.
- 4. " " " 1 and 2, and an intermediate plane in succession.
- 5. " " " Adding planes up to six.
- 6. " " " Head bending and stretching.
- 7. " " " Trunk stretching.
- *8. Trunk downward bending and stretching, with feet astride, and arms in upward raise position.

NOTES.—Exercises 1 to 6 are invaluable for exercising the trapezius group of muscles at the back of the neck, which are so often insufficiently worked in games. Weakness of the trapezius group causes "slouching." Exercises 7 and 8 work the erector spinae group at the lower part of the back.

SECTION F.—ARM, LEG, AND BODY MOVEMENTS. SKIPPING STEPS.

- 1. First skipping step.
Feet together.
- 2. Second skipping step.
Alternate raising of feet with straight knees.
- 3. Third skipping step.
Feet alternately crossed; first right in front; then left.
- 4. Fourth skipping step.
On first hop, right foot placed behind left leg, and slightly raised from ground; on second hop, rebound. Right knee extended outward.
Repeat with left foot.

CHAPTER III.

THE POISE OF THE BODY AND TONICITY.

It is of the highest importance that great attention be bestowed upon the position or poise of the different parts of the body, before any physical or breathing exercise is attempted.

Common Deformities. A chance glance sideways at people, as they walk along the street, will be sufficient to prove to even the most casual observer that the majority carry themselves badly. One or more of the following defects will be noticed : the chin poked forward, the head improperly poised upon the neck, the abdomen protruded, the chest retracted, the knees too much bent, the toes at a variety of angles—some too much turned out, others too much turned in—the arch of the foot dropped, the ankles over on the inside, the knees bowed or knock-kneed, the hips higher on one side than the other, the back curved either forward or to one side (one shoulder lower than the other, the upper part of the spine rounded or the lower part hollowed in shape). Some of these defects of carriage are no doubt the results of heredity, but manner of living and neglect of muscular exercise are the causes in most instances.

To the uninitiated it may seem unnecessary to dwell upon the carriage of the body ; but seeing that it is so exceptional for either men or women to possess a really good carriage naturally, and that it is so necessary for the health of the body that a good figure should be at all times maintained, it will not be out of place to state the laws that govern a good carriage.

The Muscles that make a Good Figure. Special muscles exist for the purpose of keeping the body erect, the chief, besides the leg muscles, being those situated at the back of the neck and at the back of the spine ; these, when properly developed, keep the head well balanced upon the spine, the shoulders squared, and the chest forming the most prominent part of the body. By physical neglect of these muscles the chin is poked forward, the shoulders are drooped, the chest becomes flattened and contracted, and the abdomen is protruded. If the body is held erect by the proper muscles, not only is the figure improved, but fatigue is not so quickly induced and even the height is increased. After walking a while with the shoulders and back rounded a tired feeling is experienced in the small of the back, which is relieved if it is drawn in.

Other muscles that are of great value in keeping the figure in a good condition are the abdominal muscles and the muscles of the buttock.

Necessity for Exercises other than those for Breathing. That the vocal apparatus may be placed under the best condition for work, we must not be content to prescribe breathing exercises only, but also exercises that will ensure a good figure.

The abdominal muscles, besides forming a natural girdle whereby the body girth is kept within reasonable bounds, have also a power in keeping the chest raised, and so help to preserve the erect figure ; and inasmuch as these muscles are unsupported by any kind of framework, such as exists in the chest, there is all the more reason for them to be kept in a good condition.

Common sense makes it quite evident that the man or woman with an erect head, a full chest, and a well-shaped abdomen will be in a position to make the best use of the vocal apparatus, and will be likely to maintain good health.

Drooped shoulders, contracted chests, protuberant abdomens, interfere with the activity of all parts of the body, both directly and indirectly ; the circulation suffers, for it is maintained more actively and easily when the body is carried erect.

The blood itself, by which all the organs are nourished, is affected by imperfect breathing, for it is impossible for the partially-expanded lung to completely aerate the blood, hence there is a deficiency of oxygen—the vitaliser, as it were, of all the tissues of the body. The digestive organs, displaced by having slipped down into the protuberance formed by the laxity of the abdominal walls, are at a disadvantage, and cannot efficiently prepare the food for its assimilation by the blood, which accordingly becomes deficient in nourishment.



FIG. 3.—THE ERECT POISE.

The muscles chiefly engaged in keeping the body upright are represented by the dark lines in the diagram. At the back they represent the muscles of : 1.—The Neck ; 2.—The Back ; 3.—The Buttocks ; 4.—The Thigh ; 5.—The Leg. In front they represent the muscles of : 1.—The Neck ; 2.—The Abdomen ; 3.—The Thigh ; 4.—The Leg.

Note the vertical plane from the centre of the head passing through the main joints of the skeleton, when properly poised.

The rule cannot be too vigorously enforced of the absolute necessity for the correct poise of the body being assumed before any exercise is attempted.

The Golden Rule.

This rule is often overlooked by those who teach exercises, for in their keen endeavours to develop the showy muscles—the biceps, triceps, deltoids, and pectorals, or one particular part of the body—they are apt to disregard the welfare of the body as a whole. The acquisition of enormous muscular limbs can do little towards the furtherance of health, beauty of physique, or tone of voice—**AN OVER-DEVELOPMENT HAS A STRONG TENDENCY TO USE UP THE VITAL FORCE THAT PROPERLY BELONGS TO THE VITAL ORGANS.**

Hulbert—Eurhythm—Novello C

The Correct Poise.

THE FEET are firmly planted upon the ground with the heels together and the toes turned outwards at right-angles to one another.

THE KNEES are straight and nearly touch one another.

THE HIPS are back, so that the front of the pelvis is behind the front of the chest bone, and the abdomen is behind the line of the chest, which becomes the most prominent part of the body.

THE WEIGHT OF THE BODY is equally distributed upon each leg, and the centre of gravity is made to fall upon the middle of the joints of the leg with the spine in its normal position.

THE CHEST is prominent.

THE SHOULDERS are squared and carry the weight of the arms.

THE CHIN is drawn slightly in, so that its point is behind the line of the chest.

THE HEAD is held erect and nicely balanced upon the neck without being stiff.

THE ARMS hang straight down by the sides of the body, the fingers curved and the thumbs straight and pointing forwards.

By standing with the back against a wall and making the back of the head, the shoulders, the lowest part of the back, and the heels touch the wall, the poise is produced which is described in books written for tailors on the science of measurement and cutting-out as the super-erect figure. This position must be stiff, and must cause displacement of the vital organs.

The Evil Results of a Bad Poise. It is impossible to lay too great stress upon the evils that may accrue from exercises done in a bad position, for the bad position is only made worse, and if muscles are strengthened when badly placed it were much better that they be left neglected, for the more strongly the muscles are developed under these disadvantages, the greater the difficulty of subsequently overcoming the deformity thereby formed.

"The object of physical training is to develop the recruit's strength, agility, and capacity for work, and in the case of the trained man to maintain them at a proper level. The build of a youth's body depends chiefly upon the characteristics of his ancestors; but his individual peculiarities have been confirmed by a growth of seventeen years or more before he enlists. He is then no longer so plastic as the boy, and will be injured rather than improved by too rapid and vigorous attempts to alter the shape and carriage of his body."

"A constrained and rigid attitude hinders the action of the heart by restricting the free movements of the chest which aid the passage of the blood from one side of the heart to the other. Such an attitude is, moreover, wasteful of nervous and muscular energy."

Extracts from an Army Book on Hygiene.

The Vocal Poise.

It is most important to determine what is the correct position to assume when vocalising. The poise must not in any way interfere with the elasticity of any part of the vocal apparatus, and yet it must be workmanlike. Obviously the right position is one of readiness for

action; the muscles which hold the body erect should be in the same condition of tension as is present in the bodies of keen athletes while engaged in playing a game of skill. The fielder in the long field, at cricket, has much ground to cover, and he does not know until the batsman shapes at the ball in which direction he is likely to have to move: he holds himself ready for any kind of movement, and so loses no time. The lawn-tennis player, between his strokes, holds himself in a position of readiness for movement in any direction. The bodies of these players are not stiff, neither are they relaxed, but are well balanced by co-ordinated muscular tension.

To understand the difference between (1) a rigid body, (2) a relaxed body, (3) a well-poised body, take a tennis racquet in the hand, and imagining that an opponent is serving, make the body (1) rigid by firmly contracting the muscles, (2) limp by well relaxing the muscles, and (3) ready for action by the co-ordinated muscular contraction which brings about that efficient poise of the body so necessary for all elegant movement. This beautiful and artistic poise is most difficult to teach, whereas the stiff, rigid position of attention is very easy to acquire. What is the stiff position good for? To do something that requires a little skill, a change has to be made from the stiff to the well-poised position. The position of attention should be a position of readiness for all kinds of action; a stiff, rigid poise is not a fit preparation for anything.

An individual assuming this rigid position on the concert-platform would provoke as much laughter from his ludicrous appearance as would the stiff athlete in the playing field. A rigid body is good for nothing. It injures voice and health, and the graceful movements used in games of skill. For voice, health, and all other accomplishments a flexible trunk is a necessity; voice is the highest accomplishment of which the body is capable, while health is the most useful. Tone in voice and tone in health are really synonymous terms, for vocal tone is the result of the perfect working of the particular part of the body that is engaged in producing voice, and healthy tone is produced by the harmonious working of the body as a whole. Health, whether vocal or general, is harmony in movement: refined, graceful results brought about by beautifully balanced co-ordinated muscular actions, in which the body answers immediately to the dictates of the mind.

The erect poise depends upon the shape of the spine, the position of the hips, the position of the shoulders, and the position of the head.

Balance in Standing.

The human skeleton is constructed so that it is suitable for the maintenance of the erect position. When a man stands upright a vertical plane passing through the top of his head falls upon the centres of all the main joints of the skeleton which transmit the weight to the ground; this is the reason why a man can carry a weight so easily on the top of his head, and explains why the gait of the uncivilised natives, who carry weights on their heads and whose feet are bare, is so good. The vertical plane passes through the joints between (1) the head and the spine, (2) the spine and the pelvis, (3) the pelvis and the thigh, (4) the thigh and the leg, (5) the leg and the foot, so that the weight from the top of the head passing through the centres of these joints is carried to the top of the arches of the foot (see Fig. 3.)

The Arches of the Foot.

The foot is a combination of elastic arches, and is therefore very strong and well adapted for sustaining weight. The principal arch is in the long axis of the foot, of which the heel forms the one pier and the balls of the toes the other pier; the level of these piers is so altered by the wearing of high heels, that instead of being held upright upon a flat surface, the body is tilted forward upon an inclined plane. The inner side of the arch is much higher than the outer side; a naked foot when wet will leave an outline on a bare floor, whereby it can be seen that only the outer part of the longitudinal arch comes into contact with the ground in the erect position. There is another well-marked arch across the foot (the transverse arch at right-angles to the longitudinal arch); at the centre of these two arches is the top bone of the foot, which forms a joint with the bones of the leg called the ankle joint. If the weight of the body is allowed to fall upon the centre of this point, it will allow the arches of the foot to have free play and to act as elastic springs. Strong fibrous bands, allowing of a certain amount of elastic play, support these arches in the sole of the foot, and they are still further supported by muscles and tendons.

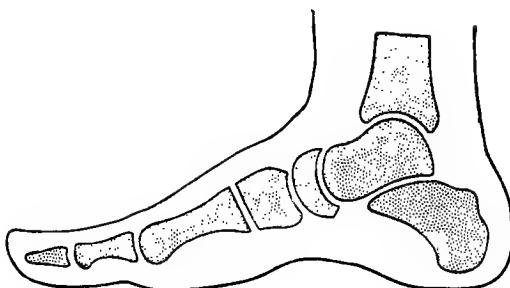


FIG. 4.—THE LONGITUDINAL ARCH OF THE FOOT.

There is a well-marked arch between the pier in front, formed by the balls of the toes, and the pier at the back, formed by the bone of the heel (*Os Calcis*). Immediately above the *Os Calcis* is the top bone of the foot (*Astragalus*). Between the *Astragalus* and the large bone of the leg (*Tibia*) is the Ankle Joint.

Flat Foot. Continuous standing, by causing undue stretching of the supporting structure, causes the arches to give way. The deformity called flat foot is prevalent amongst those who have to stand many hours daily,

a defect that can only be alleviated by rest from standing, and by strengthening the arch-supporting muscles by tip-toe exercises. Both arches normally yield when standing, and therefore, in trying on a new pair of boots, the purchaser should always stand upright in order to find out whether the boots will allow the feet free play in spreading from the yielding of the arches, when the weight of the body is brought to bear upon them.

The Centre of Balance of the Feet. To ensure a graceful, artistic, erect poise, the feet should be firmly planted on the ground, so that it can be felt touching the heads of the two piers. This grip of the floor will help to prevent the painful fidgetiness of the self-conscious performer, when facing an audience.

The upright body will be in a state of equilibrium, so far as the foot, which is the supporting base of the body, is concerned, when the weight is made to fall through the centre of the ankle upon the centre of the top of the two chief arches of the foot, in which case the weight will be equally distributed to the two piers of the arches, namely, the heel and the balls of the toes. It is a fault to direct the weight so that it falls too much upon either the toes or the heels, although perhaps the latter may be the greater evil of the two. *The upright body should be vertical, not inclined either forwards (weight on toes) or backwards (weight on heels).*

Artistic Poise on the Feet. Man's foot is so well constructed that he is able to support the weight of the body on one leg. It is not always necessary in standing to distribute the weight equally on both feet; fatigue in standing can often be prevented by a change of foot posture, whereby the weight is shifted from one foot to the other, and to both in turn. In platform work it is not advisable when standing to place the heels together. Let them be in line with one another, but separated by any distance not exceeding one foot-length. If the heels are in line, both legs must be straightened, and the weight of the body brought to bear equally on both legs. For a change, one leg may be advanced and the whole weight of the body transferred to the back leg, which must be kept quite straight. The front leg may be advanced any distance not exceeding one foot-length, and should be bent. The front leg is rested by its advanced position, and each leg should be given an equal amount of rest, for the habit of persistently standing on the same leg leads to lateral curvature of the spine. A third position is one in which the front leg is straightened and carries the whole weight of the body; the back leg is bent and the heel raised, so that the foot is on tip-toe. It is very inartistic to keep both knees

straight when the heels are not in line, or to bend the knees when the heels are in line. When the change of weight is made from the one leg to the other, it should be done deliberately in one firm and decisive movement, not by a number of fidgety shufflings of the feet. When reading from a book, it should lie open in the left palm, the left hand being held opposite the lower end of the breast bone; the fingers of the right hand should be used to mark the place.

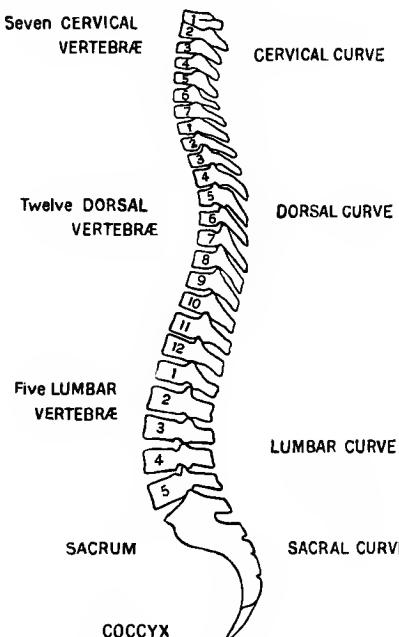


FIG. 5.—THE TWENTY-SIX BONES OF THE SPINE.

The Centre of Balance of the Spine.

The spine is a strong column which keeps the body upright, its flexibility being provided by the motion allowed between each of the twenty-six bones (vertebræ) of which it is composed. The movements consist of bending and straightening, bending sideways, and twisting ; these movements are freest in the neck and loins, and much less in the back (especially opposite the heart). Bending backwards takes place in the neck and loins only. The elasticity of the spine is increased by the pads of cartilage placed between each bone and by its curved arrangement—alternately forwards and backwards—which makes it stronger and more resistant to vertical pressure. Its springiness prevents jarring of the brain. The curves also give grace to the body, admit of lodgment of internal organs, and transmit the weight of the head and the body in the line of gravity.

The weakest part of the spine is just below the ribs at the back of the waist, in the small of the back. It is the centre of the spine and the centre of motion in the back, and is exposed to the powerful leverage of the spine above and below it. It is here that the pliable loins join the comparatively rigid back. This is the part of the spine that necessarily requires support from the back of a chair, when sitting, for being the weakest part it gives way when fatigue comes on from prolonged standing. It may be regarded as the centre of balance, for if this particular part is kept in its proper position the rest of the body will be right. If this centre is too far forward the spine will be hollow-backed, and if too far back the spine will be rounded.

The centre of balance in the upper part of the forward lumbar curve of the spine is dependant for its support upon the powerful back muscles of the loins.

**The Correct
Figure.**

The correct figure is the one that preserves the right degree of curvature of the spine. It is detected by the "sit" of the shoulders upon the chest. If the shoulders are too far forward the backward curve of the chest is too great, and if the shoulders are too far back it is too little; but if the shoulders are square to the front (that is to say, if a line passing through their centres is at right-angles to a line passing through the body from front to back) the backward curve is normal. Another test for the correct figure is the raising of the arms to a level with the shoulders. If the curves of the spine are normal, the arms will be parallel with the floor, but in hollow-backed people the hands will be too low, and in rounded-backed people too high. A third test is afforded by the position of the shoulder-blades. In the normal figure they lie flat on the back of the chest, and are separated the one from the other by a hand's breadth. If they are too far apart the backward curve of the chest is too great, and if too near together—as in the hollow-backed—the backward curve of the chest is too small.

**Exercises for
Figure.**

The two forward spinal curves are produced by the development of the muscles at the back of them. The rounded-backed people are those whose muscles at the back of the shoulders and at the back of the loins are weak. The treatment for the figure of the stooping students is the doing of movements which will strengthen the upper back and lower back muscles, of which the following are the simplest and, if properly done, are the most efficient :

Exercise for the upper back muscles.

Lie across a bed or table with the shoulders level with the edge. Lower head as far as possible, and then raise it as high as possible without moving shoulders away from table. Of course, the movement should be performed rhythmically throughout.

Exercise for the lower back muscles.

From a position in which the body is bent as much as possible straighten it to the upright position.

**The Curves of
the Spine.**

At birth the spine has one curve only, and is somewhat semicircular, with the head at one end of the semicircle and the legs at the other. A forward curve of the spine in the neck is gradually formed in the first few months of life, which allows the head to be poised upon the top of the erect spine. A little later another forward curve of the spine is formed in the region of the loins whereby the legs are placed exactly under the erect spine. The fully developed spine possesses four curves: (1) the forward curve in the neck (cervical), to keep the head upright; (2) the backward curve of the chest (dorsal), to allow room for the organs contained therein; (3) the forward curve of the loins (lumbar), for the legs; and (4) the backward curve of the pelvis (sacral), to allow plenty of room for the organs of the pelvis. The spinal curves add flexibility, elasticity, and grace, as well as strength to the spinal column, and their correct shape must be preserved. Of these four curves, the cervical, dorsal, lumbar, and sacral, the first three need only be considered practically.

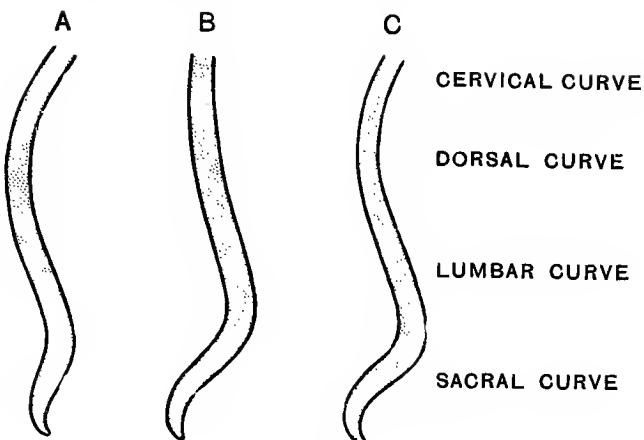


FIG. 6.—THE CURVES OF THE SPINE.

A	B	C
One-Curved Spine.	Super-Erect Spine.	Normal Spine.
“ Rounded Back.”	“ Hollow Back.”	Artistic Back.
Slouched Body, limp.	Rigid Body, stiff.	Well-poised Body, tone.
Head, forward and down.	Head, back and up.	Head, well-poised.
Chin, poked and down.	Chin, back and up.	Chin, well-poised.
Shoulders, forward.	Shoulders, back.	Shoulders, squared.
Chest, lowered.	Chest, raised.	Chest, well-poised.
Diaphragm, low.	Diaphragm, high.	Diaphragm, normal.
Vital Organs, low.	Vital Organs, high.	Vital Organs, normal.
Dorsal Curve, large.	Dorsal Curve, small.	Dorsal Curve, normal.
Lumbar Curve, small.	Lumbar Curve, large.	Lumbar Curve, normal.
Sacrum, low.	Sacrum, high.	Sacrum, normal.
Hips, back.	Hips, forward.	Hips, well-poised.
Hip Joints, forward.	Hip Joints, back.	Hip Joints, well-poised.
Abdomen, short and protruded.	Abdomen, long and retracted.	Abdomen, well-poised.

Perhaps the easiest and most practical way of understanding the significance of the curves of the spine is to describe the two extremes that are to be avoided, the “rounded back” and the “hollow back.”

“Rounded Back” and **“Hollow Back.”** The “rounded back” has the backward curve of the chest exaggerated, and the forward curves in the neck and loins correspondingly diminished, and represents a return in shape to the original one-curved spine. The head is poked forward, the front of the upper chest is depressed, the shoulders are too forward, the back is rounded with a definite “student’s stoop,” the hips are too far back, and the abdomen is protruded. The “hollow back” has the forward curves exaggerated, and the backward curve of the chest correspondingly diminished, the head is carried too far back, the upper part of the chest is thrust too far forward, the shoulders are too far back, the back is too hollow at the waist, the hips are too forward, and the abdomen is too much drawn in. The stoop figure, being flabby, is usually cured by vigorous movements, that produce the rigid hollow-backed figure, which is even more damaging to the health. Flabbiness and rigidity are to be avoided, and the mean of the two extremes acquired.

The Lumbar Curve the Centre of Balance. Very powerful muscles attached to the front, back, and sides of the lumbar curve convert the weakness of the bones into one of muscular strength. The attachments include: (1) The strong back muscles, *erector spinae*, which keep the body erect, and two other powerful back muscles, the *latissimus dorsi* and the *quadratus lumborum*; (2) the strong abdominal muscles which form the muscular walls of the abdominal cavity—these are attached to the lumbar curve chiefly by means of a strong membrane; (3) the muscular pillars

of the diaphragm, by far the strongest part of this most important muscle; (4) a strong muscle called the *psoas*, which is joined lower down by the *iliacus*, the conjoined muscles under the name of the *psoas-iliacus* forming a powerful link between the lumbar curve, the pelvis, and the lower limb.

The lumbar curve by this muscular attachment is brought into touch by more or less direct communication with nearly every part of the body: (1) By the *erector spinae* with the back of the chest, and by its prolongations with the back of the head; (2) by the *latissimus dorsi* with the upper limbs, and through them with the shoulder girdle; (3) by the *psoas-iliacus* with the lower limbs and the pelvic girdle; (4) by the diaphragm with the floor of the chest; (5) by the *quadratus lumborum* with the lowest rib and the pelvic girdle; (6) by the abdominal muscles with the walls of the abdomen, the pelvic girdle, and the ribs. The over-development or under-development of any of these groups of muscles affects not only the shape of the lumbar curve itself, but has necessarily far-reaching effects upon the shape of the body as a whole through the manifold muscular connection which has been shown to exist between the lumbar curve and the body generally. Undue development produces an abnormal figure with all its attendant ills, whereas a co-ordinate development produces a normal figure which is conducive to good health and happiness—eurhythmic aims obtained by eurhythmic means.

A faulty shape given to the lumbar curve—by the continuous action of over-developed muscular forces pulling in any given direction, gradually wearing down the counter-action of poorly developed muscular forces working in opposing directions—influences the action of all muscles attached to it in a disadvantageous manner, and mars artistic movements dependant upon the co-ordinated muscular movements of a well-poised body. The disadvantage of the improper position of the muscular forces results in the introduction of degrees of clumsiness into the bodily movements which are proportionate—all other things being equal—to the degree of abnormality produced in the figure.

Corresponding alterations in the shape of the other curves of the spine follow upon any change in the shape of the lumbar curve, and still further hamper artistic movement by interfering with the position of the muscular forces themselves and of the centre of balance.

The lumbar curve is also affected in turn by any changes in the other curves. *The lumbar curve seems to be of primary rather than of secondary importance from the point of view of balance and of muscular force.*



FIG. 7.—CHEST RAISED BY “HOLLOW BACK.”

Head and Hip Joints too far back.
Abdomen too long and retracted.
Pelvis tilted upwards and so too upright.

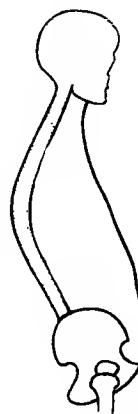


FIG. 8.—CHEST LOWERED BY “ROUNDED BACK.”

Head and Hip Joints too far forward.
Abdomen too short and protruded.
Pelvis tilted downwards and so not upright enough.

Effect on the Chest.

Of the greatest importance to vocal eurhythmics is the effect of the shape of the lumbar curve upon the position and shape of the chest. By the increased lumbar curve of hollow-backed people the chest is raised, so that the distance between the breast-bone and the pelvis is lengthened, and the abdomen becomes longer and narrower. The chest is depressed, the distance between the breast-bone and pelvis is diminished, and the abdomen is shortened and broadened by the diminished lumbar curve of those suffering from rounded-back. The condition of the abdominal walls of the lengthened abdomen is too tense, the front wall is retracted and rigid, whereas the walls of the shortened abdomen are flabby and protuberant. These opposite conditions are both unfavourable to the normal working of the abdominal organs.

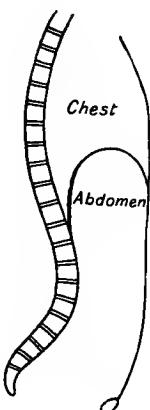


FIG. 9.—THE CAVITY OF THE TRUNK.

The Trunk is divided into two compartments by the dome-shaped partition called the Diaphragm. Note how the dome-shaped roof of the Abdomen (belly) encroaches upon the space occupied by the Thorax (chest); also note that the strongest part of the Diaphragm (the back part) is attached to the top of the Lumbar Curve of the Spine (the centre of balance).

Effect on the Diaphragm.

The position of the diaphragm—the partition between the chest and the abdomen forming the floor of the chest and the roof of the abdomen—is of still more importance to the well-being and functions of the vital organs of the chest and abdomen.

The diaphragm is attached by its strong muscular pillars to the front of the lumbar curve, and by its less powerful fibres to the inside of the rim of the base of the chest. From these attachments it curves upwards to its tendon, which forms a membranous more or less middle portion to the abdominal-chest partition. If the lumbar curve is abnormal (either too great or too small), its attachments being out of place it cannot do its work efficiently, and the position of the partition itself is altered. The greater the lumbar curve the higher the partition, and the smaller the lumbar curve the lower the partition.

Effect on the Vital Organs.

Upon the position of the diaphragmatic partition depends the position of the organs in both the chest and the abdomen, and the functions of the vital organs must be seriously influenced by their position. They cannot be expected to do their work so well, when they are too high or too low, as when they are rightly placed—a very important consideration from a health point of view.

The fibrous bag enclosing the heart, called the pericardium, is actually attached to the tendon of the diaphragm, and therefore must be directly affected by its position.

Effect on the Quality of Voice.

The position of the diaphragm affects the shape of the chest as well as the shape of the abdomen. The higher the floor of the chest is raised, the higher the chest becomes as a whole, and the more its upper part becomes pushed forward; the lower the floor, the lower the chest as a whole, and the more its upper part is depressed. This altered shape of the chest has a marked influence upon the quality of the voice, apart altogether from its effect upon the movement of the chest-walls in breathing.

The higher the diaphragm, the more tense and rigid it becomes, and the lower the diaphragm, the more flabby it is. Rigidity means hardness in vocal quality, and flabbiness means breathiness. The diaphragm cannot move efficiently if it is out of place and either too rigid or too flabby. The same may be said of the intercostal muscles situated between the ribs, and forming the sides of the chest.

The Abdominal Muscles and Balance.

The muscular abdominal walls play a very conspicuous part in maintaining the balance of the body. If they are too slack, they not only allow a forward bulging of the abdomen with its attendant evils, and the lowering of the vital organs through a misplaced and too slack diaphragm and a too small lumbar curve, but this slackness has to be taken in before an efficient abdominal movement can be made either for health or for voice purposes. This abdominal slackness also helps materially to allow a pushing forward of the hips and a sinking of the abdominal organs into the pelvis from prolonged standing. Teachers and others, who are expected to stand many hours a day, are thus exposed to the danger of countless ills attendant upon a bad posture from prolonged standing with the hips too far back, a far too common fault when fatigue comes on from a continuous standing position.

A retracted abdominal wall is necessarily too rigid. The rigid abdominal envelope interferes sadly with the efficient working of the vital organs which it encloses, besides interfering with the working of the floor of the chest, which in its turn is too high and too rigid.

Tonicity of Abdominal Muscles.

The aim should be to acquire that condition of abdominal walls which will allow them to work at the very best advantage, so that the maximum result can be obtained with the minimum amount of effort. For this purpose the abdominal walls should be neither too slack nor too rigid, but be in that condition of tonicity which will allow them to do their work easily and efficiently without interfering with that beautiful balance of forces which is so marked a feature in all accomplished movements.

This medium condition of the abdominal walls will ensure a comely shape to the abdomen, as a whole, which will be recognised by the absence of a too marked curve of its walls in any direction. Slackened abdominal walls allow a too forward and too outward a bulging of the walls of the abdomen, and too little curve of its back and of its roof; tightened abdominal walls cause too great a curve of the back and the roof, and too little curve of the front and sides; there is actually retraction in severe cases, which is most inartistic, and causes a definite displacement of vital organs upwards into the chest and downwards into the pelvis, both of which must sooner or later obviously affect the health.

The Balance of the Chest.

The position of the diaphragm—the arched floor of the chest with its strongest attachment to the front of the lumbar curve of the spine—determines: (1) The position and shape of the chest; (2) the shape of the dorsal curve of the spine, which forms the back of the chest; (3) the position of the shoulder girdle, which unites the upper limbs with the top of the chest.

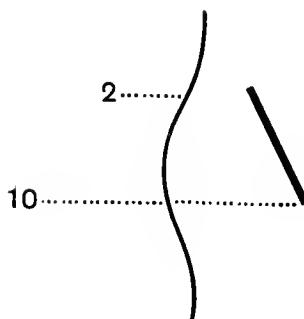


FIG. 10.

The Sternum opposite the 2nd to the 10th dorsal vertebræ forming an angle of 75° with a horizontal line passing through the bottom of the dorsal curve.

The dorsal curve of the spine differs from the lumbar curve in that its twelve dorsal vertebræ have attached to them the twelve ribs on each side, ten of which reaching the sternum in front, constitute the bony framework of the thorax. The top of the sternum corresponds to the bottom of the second dorsal vertebra. The bony part of the sternum is rather more than six inches long; its direction in relationship to the spine is very oblique, forming an angle of about seventy-five degrees with a horizontal line passing through the lower end of the tenth dorsal vertebra, so that its upper end is much nearer the spine than its lower end.

In the hollow-backed the dorsal curve is too flat, the sternum is raised, and this false position interferes greatly with the easy swing of the ribs, and therefore with efficiency in breathing. In the round-backed the sternum is too low because of the increased dorsal curve.

Attached to the top of the chest is the shoulder girdle, an arch of bone overhanging and protecting the shoulder joints, and giving breadth to the shoulders, whereby they become the widest part of the body. The

Balance of the Shoulder Girdle. The shoulder girdle is formed by two bones, the collar-bone (clavicle) in front, and the blade-bone (scapula) behind. The clavicle acts as a radius and the scapula as a moving arc in movements of the upper limbs, whereby their usefulness is much increased by an increased length of reach in almost any direction. This is invaluable in many games of skill, such as fencing and boxing, and in many occupations of ordinary life, such as sawing wood, hanging pictures, scrubbing floors, and any other work that is aided by an increased reach. The shoulder girdle by broadening the upper part of the body hides the cone shape of the upper part of the chest.

The clavicle—*clavis* = a key — something like an ancient key, extends horizontally outwards for a distance of six inches from the top of the sternum to the top of the shoulder. The clavicles keep the shoulders so wide apart, that the width of the male skeleton is about an inch greater at the shoulder than at the hips—the extra breadth of the pelvis makes the hip measurement of the female slightly the greater. The width of the shoulders is diminished by any interference with the horizontal position of the clavicles, either by the raising of the sternum or by the carriage of the shoulders too far forward or too far back. The balance of the body demands that the shoulders as well as the hips should be square to the front.

The scapula is a triangular-shaped bone lying flat upon the back of the chest covering the first seven ribs at the back. The front surface facing the ribs is somewhat hollowed out, so as to conform to the rounded shape of the chest. On the back of the scapula is a well-marked projection of bone, about six inches long, called the spine of the scapula, easily felt under the skin, running obliquely upwards from about the middle of the spinal border (the border of the scapula lying parallel with the spine) to the top of the shoulder. The spinal borders of each scapula should be parallel with one another and with the spine, and should be

separated by a distance of about six inches. It will be noticed that the length of the sternum, of the clavicle, of the spine of the scapula and of the space between the scapulæ are all equal, namely, a little over six inches, which is also the length of the hand, omitting the last joint of the middle finger.

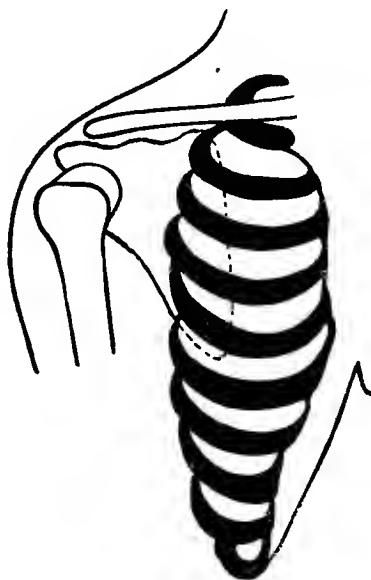


FIG. II.—THE SHOULDER GIRDLE.

The Shoulder Girdle is formed by the Clavicle (collar-bone) and the Scapula (blade-bone). The Scapula forms with the head of the Humerus (arm bone), the shoulder joint. Only ten of the twelve ribs are shown in this diagram, as the 11th and 12th ribs do not reach to the front of the chest.

Movements of the Arm. Movement of the shoulder girdle takes place at the joints (1) between the clavicle and the sternum ; (2) between the clavicle and the spine of the scapula. The scapula, swinging from the end of the clavicle,

can be moved (1) backwards and forwards around the chest, by which means the shoulders are moved backwards and forwards ; (2) upwards and downwards as in the act of shrugging the shoulders ; (3) in a circular manner by rotating on itself, whereby the arm can be raised from the horizontal to the perpendicular. All these movements, either separately or combined, increase the reach of the arm in different directions, and thereby add to the usefulness of the upper limbs in many ways.

The joint between the scapula and the head of the arm bone (humerus) is very shallow, and allows of the freest movement in all directions. The clavicle, about six inches long, moving at the joint between it and the top of the breastbone (sternum), keeps the shoulder six inches away from the sternum by making the scapula swing around the chest, and thus *the weight of the shoulders is removed from the chest in all positions of the upper limbs by the shoulder girdle.*

Squared Shoulders.

It is the shape of the chest that determines the position of the shoulders, and not, as is generally believed, the position of the shoulders that determines the shape of the chest. If the dorsal curve of the chest is too great the shoulders are carried too far forward, and if too small the shoulders lie too far back. But if the shape of the chest is normal, which means that both the lumbar and dorsal curves are correct, the position of the shoulders will

be square to the front; that is to say, a line passing through the centres of the two shoulder joints will be at right-angles to a line passing through the chest from front to back. This correct position of the shoulders is obtained by lying flat upon the back on a hard surface, such as a table or the floor. Imagine in this position that a line at right-angles to the floor is drawn through the chest, another line drawn through the centres of the shoulder joints will be parallel to the floor, and consequently at right-angles to the line through the body. The shoulder blades lie flat upon the floor and flat upon the back of the chest, the distance between each scapula being equal to the length of the clavicle. If the same position is maintained when standing upright, then the spinal curves are normal, but if not they are abnormal. *The position of the shoulders, being an invaluable index of the shape of the spinal curves, is of the utmost importance in the diagnosis of the balance of the body.*

The shoulders being squared to the front, the arms will hang down gracefully, and if raised forward to the height of the shoulders the arms will be parallel to the floor. The arms of the hollow-backed when raised forward slant downwards, and those of the round-backed slant upwards. Give the command, "Arms forward raise!" to a squad, stand at the side, cast the eye upon the line of forward raised arms, and a rough and ready idea can be obtained of the kind of spinal curves that have been produced in their training; arms parallel with the floor indicate normal spinal curves, an upward or downward slant abnormal spinal curves. The upward slant is accompanied by a depressed chest and retracted hips, the downward slant with an elevated chest and protruded hips.

In examining an individual the "sit" of the shoulders is a good test, for unless the shoulders are square to the chest, not only is the chest misshapen, but the spinal curves are abnormal. It will be noticed, too, that when the shoulders are square to the chest, the shoulder blades lie flat upon the back of the chest, and are six inches apart; also, that the clavicles are horizontal, and that the chest is neither too high nor too low.

The function of the shoulder girdle is to give increased movement to the upper limbs, by making the scapulae move through the arc of a circle, the clavicles performing the function of the radius; and so long as the clavicle is unbroken the scapula, and so the weight of the shoulder, is kept off the chest in all positions of the arms. It is not correct to affirm that the forward shoulders of the round-backed press upon the chest and interfere with its action, for the length of the clavicle prevents this, but rather to state that the forward position of the shoulders of the round-shouldered is due to a depressed chest, which has a too pronounced dorsal curve. *If the shoulders are pulled well back (as is so frequently advocated for the purpose of "opening the chest") they will interfere with breathing by the continuous tension applied to the muscles passing from the chest to the upper arm (the pectoral muscles).*



FIG. 12.—CHEST WELL-POISED BY NORMAL SPINE.

Note the artistic balance of the Head on the Spine, of the Spine on the Pelvis, and of the Pelvis on the Femur (thigh bone).

The Balance of the Head.

If the normal curves of the spine are developed, the head will be properly poised upon the body in the upright position. If the eyes are directed forward to a point on their own level, the chin will be at right angles to the body, and will neither be poked forward nor unduly retracted; the point of the chin will be behind the most prominent part of the chest. The shape of the chest affects the position of the head as well as the position of the shoulders, for the cervical curve of the spine is normal in a correctly shaped chest. Weakness of the upper back muscles (the trapezius group) diminishes the cervical curve. This frequently happens in athletes whose figures are otherwise quite good, and largely accounts for the much talked of "slouch" of the public school boy, a defect due to the school games failing to work this group of muscles sufficiently. Swimming is an excellent exercise for the trapezius group of muscles, and is therefore a good correction for the "slouch." (See also exercises in Chapter II.)

Movements of the Head.

Movements of the head upon the body take place at (1) the joint between the skull and the bone at the top of the spine (the atlas), and (2) the joint between the atlas and the next bone of the spine (the axis). The first joint allows of a free forward and backward bending (as in the gesture signifying—Yes) of the head upon the spine and a limited sideways bending. The second joint (*atlo-axoid*) is a real pivot joint, and allows of a free turning movement of the head from side to side (as in the gesture signifying—No). The combined movement allowed by both joints is a rolling or circling of the head upon the spine, which is perhaps the best exercise for promotion of ease and grace of the head poise.

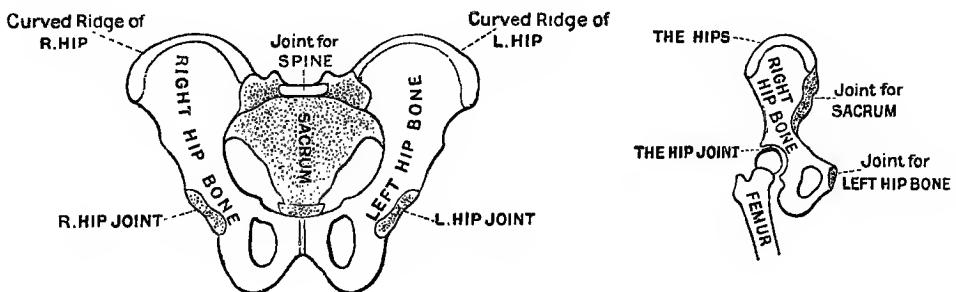


FIG. 13.—THE PELVIS.

By the term "Hips" is meant the "Crest of the hip bones"; the hip joints are much lower. When the Pelvis is tilted upwards (so that the Sacrum is raised, and the front of the Pelvis is lowered) the "Hips" are carried forward and the hip joints are carried backwards (and *vice versa*). When the Pelvis is well-poised as in the diagram, the lower end of the Sacrum (the Coccyx) is higher than the lower part of the junction of the hip-bones in front. In "Hollow Back" the Sacrum is raised too high by the upward tilting of the Pelvis. In "Rounded Back" the Sacrum is too much depressed by the downward tilting of the Pelvis.

The Balance of the Pelvic Girdle.

Between the lumbar curve and the lower limbs is a set of bones, consisting of the last two bones of the spine (the *sacrum* and *coccyx*) at the back, and the large hip bones (*os innominatum*). These bones are fixed together by immovable joints in front and behind, and form a bony cavity, called from its fancied basin-like appearance, the pelvis. The pelvis has many important functions to perform. It forms: (1) a bony ring which transmits the weight of the body to the legs; (2) an axis for the movement of the legs upon the body; (3) an attachment for many of the strong muscles of the legs and the body; and (4) a cavity for the pelvic organs.

The sacrum forms the keystone, and the innominate bones form the pillars of a strong arch, which conveys the weight of the trunk to the legs, so that in the standing position the line of gravity passes from the spine through the hip and knee joints, and falls upon the top of the arches of the feet. This pelvic arch is well-named the pelvic girdle, as it connects the spine with the lower limbs.

The Inclination of the Pelvis in Action. In the standing position the pelvis should be inclined to the horizon, so that it forms an angle of 60° , and thus the weight of the abdominal and pelvic contents will fall upon the abdominal muscles and the front

of the pelvis, instead of falling upon the soft floor of the pelvis. This plane of the pelvis in the erect position, more nearly approaching the vertical than the horizontal, makes the narrow front wall half an inch lower than the deep back wall, and in this position the vertical line through the centre of gravity of the body passes through the joint between the lower end of the lumbar curve and the pelvis, and falls exactly upon the middle of the hip joints (see Fig. 3 and Fig. 13).

The female pelvis is thinner, slighter, shallower, and broader than the male.

Balance of Pelvis on Legs.

The cup-shaped joint between the pelvis and the thigh bone (*femur*), called from its resemblance to a vinegar cup, the *acetabulum*, is very strong and deep. By far the thickest and strongest part is that which has to support the weight of the trunk. This part must in the upright

position occupy the highest point of the joint, which it will do if the pelvis is inclined at the right angle, so that the line of gravity of the spine falling perpendicularly upon the sacrum is transmitted by the strong arch of pelvic bones directly on to the heads of the thigh bones. The *acetabulum* faces downwards and outwards, and its well-marked notch occupies the lowest position of the joint.

The head of the *femur* forms with the socket of the *acetabulum* a perfect ball and socket joint which allows of a pendulum-like swing of the lower limbs in walking. The thigh bones are not quite perpendicular, but slant inwards, so that the knees are brought nearer together than the hips; the greater obliquity of the thighs of women consequent upon the greater breadth of the female pelvis accounts largely for their peculiar gait. The obliquity is increased by the length of the neck of the *femur*, which widens the base of support for the trunk and gives greater leverage to the muscles which balance the pelvis upon the legs. No animal can place its legs so widely apart as man.

The Sacral Curve of the Spine. The *sacrum* is curved backwards, forming the spinal curve called the sacral or pelvic curve. The hip bones are expanded and curved laterally. The top of these lateral curves can be readily felt at the lower part of each side of the abdomen, forming a well-marked, curved bony prominence called the hips, upon which the hands are placed when resting upon the hips (the so-called "hips-firm" position). If the hips are too far back (as in "round back") the inclination of the pelvis is diminished, the balance of the body is upset, the weight of the abdominal organs falls upon the organs of the pelvis, and the line of gravity falls behind the hip joint. If the hips are too far forward (as in "hollow back") the inclination of the pelvis is increased, the balance of the body is upset, and the line of gravity falls in front of the hip joints.

Both from the health and from the figure point of view it is equally important that the right inclination should be given to the pelvis, for a body that is gracefully poised upon the lower limbs keeps the pelvic inclination at an angle which will prevent damage to the pelvic organs from undue pressure of the abdominal organs upon them.

The Pedestal of the Spine.

In practice it is necessary to be able to feel the position of the tops of the hip bones; this definitely curved mass of bone cannot possibly be mistaken for anything else if once properly detected. No trouble should be spared in trying to understand the significance of the effect of the movement of the pelvis upon the balance of the body. By the hips is meant the curved ridge forming the highest point of the hip-bones. It can easily be found in the body just below the waist. The curve formed by spreading out the first finger and thumb of each hand, will exactly fit on to the curved ridge of the hip-bones on each side, and this is where the hands should be placed when the command "hips firm" is given. While still keeping the ends of the fingers and thumbs in position, the wrists can be lowered so as to prevent stiffening and raising of the shoulders (*see Fig. 13*).

The pelvis forms a pedestal for the spinal column, therefore its position in the erect posture is of paramount importance. With the hands placed in the above position the hips should be drawn back, so that the middle of the crest occupies the highest position; the innominate bone will then be perpendicular, and the *acetabulum* will face downwards and outwards. If the hips are drawn too far back, the hinder part of the crest will be uppermost, and if the hips are too far forward the front part of the crest will be the highest. In either of these cases the inclination of the pedestal will be faulty, and the weight of the trunk will fall in front of or behind the joints of the lower limbs. In "hollow back" the hips are drawn too far back, and the line of gravity falls in front of the joints of the legs. In "round back" the hips are too far forward, and the line of gravity falls behind the joints of the legs. Thus the position of the hips is intimately connected with the shape of the lumbar curve.

If one hip is higher than the other, the pelvis is said to be tilted to one side, and, the pedestal being tilted, the spinal column inclines to one side, so that one shoulder becomes higher than the other. If one leg is longer than the other, the hip will be higher on the side of the longer leg. A straightened leg is longer than a leg which is bent at the knee, therefore standing with one leg bent and one leg straight causes tilting of the pelvis and bending of the body sideways. Continually standing on one leg will cause a permanent tilting of the pelvis and spinal curvature, but changing from one leg to the other, so that the amount of standing is equal for each leg, is excellent practice, as it gives a change of pose and rests the bent leg.

Physiological Poise.

The poise of the cultured athlete is artistic from the point of view of purpose. He knows what he has to do, and he takes up the position that is most likely to enable him to carry out his purpose in the easiest and most efficient manner.

The principle of position is based upon the law of the physiological poise of the body, which is the outcome of co-ordination through the reciprocal innervation of muscle (Sherrington's law).

Physiological poise produces neither rigidity nor flabbiness, but an intermediate condition of tonicity, efficiency or readiness for action, and should be the underlying principle for building up the position of "attention." Rigidity is not seen in those engaged in playing the real national games of skill of which the English nation is so proud, but appears in the artificial positions taken up by those who face an audience, unless their minds are full of the purpose of their work.

A purposeful movement cannot possibly be efficiently carried out from a rigid attitude; the movements themselves will be rigid unless the antagonism which produces the rigid attitude be removed before the movement takes place. This alone entails a certain loss of time, which however inappreciable must sorely affect any accomplishment. Rigid movements themselves effectively destroy any accomplishment, are harmful to the health, are inartistic and arhythmic, chiefly because they are absolutely devoid of purpose, and so are inco-ordinate with the mind.

Perfect poise of the body as a whole constitutes perfect health—that is, the refined health of intellectuality as opposed to the crude health of the manual labourer, and means perfect tone in health (a feeling of fitness), just as perfect poise of the vocal apparatus means perfect tone in voice.

The true artist when facing his audience has perfect control over himself in every way. He is careful to assume the right attitude ; he is neither too prodigal nor too lavish with his gestures ; "he suits the action to the word," and "does not saw the air too much with his hand"; he expresses with his face, and especially with his eyes, the feelings or sentiments that are uppermost in his mind, while he conveys them to the minds of the audience with his musical voice, and thus he brings his body into subjection to his well-disciplined mind.

Perfect Balance Due to Tonicity. The first step in practice is the assumption of a physiological poise of the body, which will enable it to work efficiently and to move in the easy, graceful, harmonious manner of the well-trained artist. A finished movement consists of a well-regulated expression of an intellectual impression carried out by a beautifully poised body. The poise involves regulation of muscular contraction by the principle of co-ordination in movement, whereby the condition of muscular tonicity is produced as opposed to rigidity and flabbiness. The degree of tonicity varies according to the purpose to be achieved. The greatest degree of tonicity precedes the spring of the jumper, and is equivalent to that assumed by the cat or tiger, when the greatest possible exertion is to be put forth by all the muscles that take part in the resulting action. The extreme degree of tension is much easier to understand than the lesser degrees that are necessary for less exertion, and has probably misled people into thinking that the greatest tension is a necessary preparation for all actions ; hence the rigid attitudes assumed for the performance of any movement, and the introduction of antagonistic forces which promote vigour and jerk in the work.

Tonicity Due to Co-ordination. Perfect balance is the foundation of grace, of beauty, and elegance of proportion, and is dependent, as is movement itself, upon "co-ordination." "*Co-ordination in movement*" produces tonicity of the moving body in its proper relationship to the laws of gravitation and of atmospheric pressure, and allows the body to move in the most efficient manner to effect the purpose in hand. It involves not only co-ordination in expression, but also co-ordination between impression and expression, so that the act of expression contains in it the appreciation of all that pertains to beauty itself, and the knowledge that is necessary for the execution of the purpose in hand. The body, being in the most favourable condition of tension (neither too great nor too little—that is, tonicity), is able to move in the easiest, most effective, and therefore most graceful manner. No part of the body suggests stiffness or flabbiness, but rather the sinuosity of elasticity, whereby the whole and each and every part rings with the resonance of masterly control, and meaning is expressed both universally and particularly by the moving body, so that there is perfect rhythmic relationship between the separate parts of the complete movement.

Degrees of Tonicity. Just as there are degrees of intensity in emotion, so there are degrees of intensity in tension—tonicity being the term to indicate that the tension is proportionate to the purpose of the action. The tonicity of the "modest stillness and humility" of the peaceful man is quite different from the tonicity of the same man when "the sound of war rings in his ears" and he is told to "imitate the action of the tiger." The varying degrees of tonicity are well in evidence in the cricket field when a really smart fielding eleven are at work, the attitudes and the muscular condition of those nearest the batsman being quite different from those further away.

Tonicity of the Vocal Apparatus. While voice is being made, the walls of the vocal apparatus must be held in a certain state of tension varying with the pitch and the intensity of the note. Over-tension causes rigidity and under-tension flabbiness. Rigidity causes a hard tone and flabbiness a breathy tone. A loud, hard tone is unfortunately admired by many, and is very easily produced by the teaching of vigorous antagonistic movements ; the opposite faulty tone also has its advocates.

Is not the breathy tone sought by those, who adopt the teaching of the so-called head voice for overcoming the raucous sounds of the so-called chest voice, the result of a flabby state of the walls of the vocal apparatus? The coo-ing breathy tones of children, taught to bring the head voice into the chest voice (although the sounds freed from the harshness produced by rigidity are more pleasing to the ear), are not musical, and cannot convey the real meaning of the music. The fancied pleasing effects are so unreal, that an irritating affectation takes the place of whole-heartedness; to the lover of real tone, the flutiness, so noticeable in the singing of some of the highly-trained Church choirs, is almost as distasteful as the raucous but more hearty singing of those who have had little training.

The head-voice principle in voice-training is an easy means of removing an unpleasant fault by the introduction of an opposing fault of a more pleasing character. Although flabbiness is not so easy to teach as rigidity, it is infinitely easier to acquire than that condition of due tension which is called tonicity. Whenever the body is called upon to respond to some new idea, it will at once become rigid owing to the antagonistic forces asserting themselves whenever force is used. If the antagonistic forces are too subdued flabbiness results. It is much easier to reach an extreme than it is to strike the happy mean. There is present in nearly all choirs, trained and untrained, either hardness or breathiness due to a too rigid or too flabby a vocal apparatus. If the vocal apparatus is in a state of tonicity, the voices are musical, and beautiful tone, which alone is able to express the appreciation of a cultured mind, is present.

The varying amount of tension that is required in the walls of the vocal apparatus for the production of vocal tone throughout the range of the voice, is a quality of tension which avoids the two extremes of rigidity and flabbiness, and is well-named a condition of tonicity; for the muscles are, (1) ready, (2) in the best possible state for immediate response to the demands made upon them, (3) the purpose to be effected can be carried out in such a manner that the maximum result is obtained in the easiest possible way by the expenditure of the minimum amount of force. The performer seems to be working at the greatest advantage, and the result is so proportionate to the exertion that the movements appear to be effortless; and mental, rather than physical, force seems to be the potent influence. This co-ordination of forces directly controlled by the mind is the final aim of eurhythmics.

Decision and Precision.

The condition of tonicity renders the whole body capable of responding to the will so immediately and fully that the body becomes the well-controlled servant of the mind. Mental decision becomes physical precision, eurhythm exists between mind and body, and perfect health, happiness, and finished movement result.

Tone of mind and body both act and react one upon the other. Accuracy in physical precision depends upon accuracy in mental decision, and accuracy in decision is developed by accuracy in precision. The most direct and tangible way of reaching the mind is through movement, and opens the way for much original work directed towards the removal of mental defects as well as the development of the mind.

The Upright Position—Attention.

Man is the only animal that stands erect. It has been said that he has not yet had time to get used to the upright position. The more civilisation advances the farther removed does man become from those natural physical forces that play such an important part in the preservation of his general well-being. The extravagance that inevitably follows in the wake of civilisation (extravagance in toilet and dress, extravagance in eating and drinking, extravagance in ease and luxury, extravagance in work and play, and extravagance in pace) makes artificial aids to health a real necessity. If man had through all the ages followed the pursuits for which he was originally intended and for which he was especially constructed by nature (the cultivation of the soil and the hunting of game), he would have been able to assume the erect position with dignity and grace. The sedentary occupations of city life have engendered so much muscular weakness that the student and clerk have developed a particular type of figure which is detrimental to health and to voice, and hampers

movements in locomotion, in games, and in any other accomplishment. Just as there is said to be grace and dignity in movement, so is there grace and dignity in standing still. The inexperienced speaker cannot stand still in front of an audience: there is a fidgety, restless swaying of the body, a continual shifting of the weight of the body from one leg to the other, a spasmodic movement of the free leg as if it were antagonistic to and always trying to get away from its fixed companion, a windmill action of the arms or an emphatic curtsey of the body, accompanied by a constantly recurring inflection of the voice with a cadence that is an idiosyncrasy of the speaker. This not only means a monotonous delivery and causes inattention of the audience, but it makes the speaker appear weak; for restlessness means want of control over the movements of the body. A speaker must learn to stand firmly without restraint. Stiffness of the chest or body always means strain, it interferes with the breathing and makes the quality of the voice hard. The stiff appearance takes away all grace, and is just as ludicrous in its effect as is the restless position.

The standing position is *the* fundamental position; it is the foundation of all the starting positions used in physical exercises done in the upright position; it is the fundamental position for voice, for dancing, for games, and for gymnastics with or without apparatus. A careful description of this position, which is usually styled the position of "Attention," must be given, and it is proposed to make it suitable for all purposes and not, as is usual, for physical exercises only. The main principles to be observed are (1) that the body should be placed in the most perfect state of stability, so that its organs may have free play; (2) that the various quick movements that have to be started from this position—in dancing, games, singing, and speaking—may be effected without any loss of time or of energy. Stability depends upon physiological poise and tonicity, and effective action upon leverage and artistic movement. These two principles are very dependent the one upon the other. There must be firmness without stiffness, and the line of the centre of gravity of the body must be so favourably placed that it calls forth as little energy as possible from the muscles that keep the body erect.

A good idea of the correct standing position can be obtained by observing the position taken up by champions while playing at their respective games. The tennis player, or the cricketer fielding out in the deep field is seen to be upright, firm, quiet, with muscles free from stiffness or rigidity, but in a condition of tonicity, whereby they are all ready to follow at once the dictates of the will.

The condition of tonicity gives grace to the attitude, adds tone to the voice, and supplies dignity to the action. Everything being ready there is no hurry or scurry (as in jerky movements), no scamping of work (as in flabby movements), but an all-round efficiency. This idea of readiness provides an argument against any position being assumed from which an unlocking, as it were, has to be made before any action can be taken—the unlocking causes a waste of time and energy.

Principle.—Stability (with tonicity).

Position of "Attention." Readiness for action (in any direction).
Fully erect but not stiff.

Weight of body equally poised upon both feet.

The main joints of the body in line with the top of the arches of the feet.

Avoid any forcing of—(1.) The chest forward.

- (2.) The small of the back in.
- (3.) The shoulders back.
- (4.) The abdomen in.
- (5.) The chin in.
- (6.) The hips back.

Feet.—Firmly planted upon the ground, weight on both piers of arches (heels and balls of toes). Heels together, feet turned out so as to form a right-angle—that is, each foot to form an angle of 45 degrees with an imaginary straight line passing forwards from the heels.

Notes.—Although many contend that the feet should be at an angle of 90 degrees with the imaginary straight line for foot placings and other exercises, it is to be observed, (1) that more stability in standing is secured by keeping the angle at 45 degrees, it may be even less than this in marching and hopping; (2) an angle of 90 degrees is disadvantageous for voice, games, and dancing. The weight of the body should be brought to bear upon the centre of the instep of the naked foot; the heel of the boot, by raising the height of the heel, directs the weight forward so that it falls principally upon the forepart of the foot. It must be remembered that the longitudinal and transverse arches of the feet act like springs, and that these natural springs are nullified by the heels of the boots.

Knees.—Straightened and nearly touching.

Hips.—Drawn back, so that the weight of the body is equally distributed upon each leg, and falls upon the centres of the joints of the legs with the spine in its normal position and the front of the chest the most prominent part of the body.

Notes.—By the hips are meant the curved ridges at the top of the pelvis; the pelvis is the pedestal upon which the spine is supported; the spine forms the bony column or backbone of the trunk; the position of the pedestal determines the position of the chest and abdomen, and is therefore a determining factor in getting the right poise.

It is very important to insist that there must be an entire absence of stiffness or strain in this position.

It must be made essentially a position of readiness for artistic movement.

Chest.—Sufficiently forward to make *the lower end of the breast-bone the most prominent part of the body in front*

Notes.—The chest must not be forced forward and held in a state of rigidity by the shoulders, chin, and hips being dragged back, otherwise the breathing will be hampered. *The chest walls must always be allowed to have free and easy play.*

Abdomen.—Just behind the most prominent part of the chest.

Notes.—The abdominal muscles in a state of tonicity, not retracted (contracted) nor protruded (relaxed).

Back.—Preserving the natural curves of the spine.

Notes.—The Lumbar curve must not be made too great by forcibly drawing in the small of the back—“hollow back.” The Dorsal curve must not be made too great by stooping or slouching—“round back.”

Shoulders.—Squared to the front and down (that is at right-angles to an imaginary line passing through the body from front to back), with the blade-bones lying flat upon the back of the chest and at least a hand-width apart, with their inner borders parallel to one another and to the spine.

Notes.—The shoulders will naturally take up this position when the chest has been properly developed by breathing exercises.

On no account must the shoulders be drawn back behind this position, or raised above this position, for in either case the pectoral muscles will be stretched, the chest wall stiffened, and the breathing hampered and hindered.

“Shoulders square to the front” means that the shoulder-blades should not be forced back too close to the spine, but that a line drawn across the back of the shoulders should be square (at right-angles) to a line drawn perpendicularly to the body. The shoulders are in this position when the body is recumbent.

Arms.—Hanging loosely from the shoulders.

Elbows.—Slightly bent.

Hands.—Thumbs straightened, backs of thumbs directed straight forward, with the fingers curled, so that the end of the thumb touches the end joint of the first finger.

Head.—Balanced nicely upon the spine, erect, and in line with the body, with the chin square to the chest, and the eyes directed to a point on a level with them.

Notes.—The chin will be slightly drawn in to bring it behind the most prominent part of the chest in front, but it must not be unduly retracted, neither must it be poked forward, raised, nor depressed.

There must be an absence of stiffness.

The head will naturally take up this position when the chest has been properly developed by breathing exercises, if due regard is paid to the hip and shoulder poises.

The following special poise exercises should form a daily routine:

Special Exercises for Correct Poise. Success will be attained by all who spend enough care, intelligence, and perseverance in following out the instructions.

Exercise 1.—To get the feet firmly planted upon the ground, and to balance the weight of the body upon the arches of the feet.

Position.—Attention.

Hands (or fists) upon the hips.

<i>Movements.</i>	1.—Feet close.	(1.) Toes raise.	} Breathe in.
		(2.) Pivot on heels.	
		(3.) Toes lower.	
	2.—Feet open.	(4.) Toes raise.	} Breathe out.
		(5.) Pivot on heels.	
		(6.) Toes lower.	

Repeat the exercise from six to twelve times.

Notes.—Care must be taken that each foot is moved outwards and inwards at an equal pace, so that at the end of the outward movement each forms an angle of 45 degrees with an imaginary straight line passing through the junction of the heels. The student must clearly understand what is meant by an angle of 90 degrees and an angle of 45 degrees.

This exercise, besides teaching what is meant by the term "Foot poise," is also very useful as a means for learning to balance the body upon the feet. It will be found that the balance is more easily acquired by making the chest prominent.

Exercise 2.—To get the knees flexible.

Position.—Attention.

Hands (or fists) upon the hips.

Heels raised.

<i>Movements.</i> —(1.) Knees half bend.	
(2.) Knees straighten.	

Repeat the exercise from six to twelve times. At end of exercise lower heels.

Notes.—In bending the knees they should be directed outwards as well as forwards, so that they may reach a point from which a plumb-line being dropped will strike the centre of the front of the toe-cap of the boot.

Exercise 3.—To get the hips in the right position and flexible.

Position.—Attention.

Hands (or fists) upon the hips.

Book balanced upon the head.

<i>Movements.</i> —(a) (1.) Raise the heels three to four inches.	
(2.) Lower the heels.	
(b) (1.) Raise the heels.	
(2.) Bend the knees as much as possible.	
(3.) Straighten the knees.	
(4.) Lower the heels.	

Repeat the exercises from six to twelve times.

Notes.—Any balance exercise carefully executed is useful for acquiring a good hip position, of which the following may serve as types.

(a)—While balancing the body on each leg alternately, raise the free knee until (a) the thigh is at right-angles to the body, (b) the leg is at right-angles to the thigh, and (c) the foot is at right-angles to the leg.

(b)—While balancing the body on each leg alternately, swing the free leg (a) straight outwards, (b) forwards and backwards, and (c) in a semicircle forwards, outwards, and backwards.

These exercises will strengthen the hip muscles which balance the pelvis upon the thighs, and keep it in its proper position, so that perfect equilibrium is preserved throughout the changing positions of the body, that any complicated movement in a game or an accomplishment demands.

Exercise 4a.—To get the chest well-shaped, in a good position and flexible.

Position.—Attention.

Arms forward raised.

Movements.—(1.) Swing arms to “Arms sideways raised” position.

(2.) Swing arms to “Arms forward raised” position.

Repeat the exercise from six to twelve times.

Notes.—Breathe-in during movement (1), and breathe-out during movement (2). The swing of the ribs must correspond with the swing of the arms, making it eurhythmic and so artistic throughout. Any breathing movement done artistically improves the shape of the chest. This same exercise is also useful in discovering and correcting a bad hip position, and may be used as follows.

Standing in the position of attention, with the feet firmly planted upon the ground, the heels together and the toes turned out, so that the feet form an angle of 45 degrees, with the knees straightened : Raise the arms forwards. (If the arms in the “Forward raised” position are exactly parallel with the floor, the hips will be in the right position ; if the hands are too high the hips will be too far forward ; and if the hands are too low the hips will be too far back.) Part the arms sideways, keeping them parallel with the floor throughout the movement, and also when returning to the original position. In parting the arms they must not be carried back farther than the shoulder line, otherwise the chest-wall will be stretched. While the arms are being carried from the front to the sides, breath should be taken in through the nose smoothly, noiselessly, and firmly, and should be breathed out again either through the nose or mouth in the same manner while the arms are being carried from the sides to the front. This breathing should begin and end with the arm movement, and there should be no appreciable interval between the breathing-in and the breathing-out ; the whole exercise should be carried out as rhythmically as possible.

The commands for this exercise may be given as follows :—

Class—Attention. (Quiet, full-toned command.)

Arms forward—Raise. (Slow and firm command.)

Arms parting, with quiet nose breathing—move. (Smooth command.)

Rest.

Folding the arms behind the back is likely to cause the forward hip position, and should be avoided when vocalising. It also tends to cause stretching of the chest by dragging the shoulders too far back, and it causes stiffness of the trunk.

If it is really necessary to get the hands out of the way, let them rest easily upon the hips. The easiest and best position is to allow the backs of the knuckles to rest upon the hips, the fists being lightly closed.

Wearers of high heels are less liable to suffer from the forward hip position ; the raising of the heels throws the body forward and the hips are consequently drawn back.

Tip-toe exercise with the arms in the "Forward raise" position is another good exercise for the hips. In doing this exercise, start as in the last exercise from the position of "Attention," and raise the body steadily and smoothly straight upwards on to the toes, with the arms raised forward so that they are kept parallel with the floor throughout the movement. Breathe in through the nose while raising the body, and breathe out while lowering it; breathing to be rhythmical, as in the last exercise.

Commands : Class—Attention.

Arms forward—Raise.

With quiet breathing-in through the nose, Heels—Raise. Heels—Lower.

Rest.

The forward placing of the hips also causes an increased curve of the spine at the back of the chest, which in turn causes the shoulders and the head to sit badly upon the misshapen spine, so that the student becomes what is commonly called round-shouldered and also pokes the chin forward—"Round back."

Special correction exercises, such as "Arms parting" with the body bent forward, are necessary for the drawn back hips of "Hollow back," a deformity very bad for voice and health and very difficult to cure.

Exercise 4b.—To get the chest well-shaped by abdominal movements.

In order to prove that the movement of the abdomen affects the shape of the chest, place the right hand flat upon the centre of the abdomen, and the left hand flat upon the top of the front of the chest. As the abdomen is drawn in, the front chest-wall is pushed forward and upward; it falls again as the abdominal wall goes forward (the hands take no active part in the movement but are merely passively moved by the in-going and out-coming walls of the trunk ; their purpose is to feel the movement).

Position.—Attention.

Right hand on abdomen.

Left hand on chest

Movements—(1.) Swing front wall of abdomen in. (Abdominal Press.)
(2.) Swing front wall of abdomen out. (Abdominal Release.)

Repeat the exercise from six to twelve times.

Notes.—This exercise is used in physical education for the correction of flat chests. The greater the abdominal force used, the greater and quicker the alteration in the shape of the chest becomes ; it is often carried to such an extreme that an ugly protuberance of the upper chest is formed amounting to a deformity (the change can be made still more pronounced by filling the lungs with air and making the abdominal push while holding the breath). It is well to note that it is bad practice to effect too rapid a change in the shape of the body ; it is much better for the general health that the vital organs should be gradually changed from their old faulty position to their new normal position.

This exercise is also a good corrective for a faulty hip position, especially if performed with the body inclined forwards.

On no account must rigidity of the chest or abdomen be produced.

Exercise 5.—To balance the head gracefully upon the neck.

Roll the head round upon the neck, using the neck as a pivot, describing as large a circle with the point of the chin as possible. It is not advisable to move more than twice in any one direction, and it is better to make two rolls to the left followed by two rolls to the right to prevent giddiness. Eight rolls in all are quite sufficient. The head only must move, the rest of the body being kept quite still in the position of attention.

Repeat the exercises from six to twelve times.

Notes.—The position of the head depends so much upon the shape of the cervical curve of the spine, that exercises for correcting a faulty shape of the spine (breathing exercises) are the best for the poise of the head and also of the hips as well, that is for the poise of the two ends.

Exercise 6.—To get a good shaped and elastic spine.

Position.—Lying on the floor face downwards, nose and chin nearly touching the floor, wrists in line with the waist, elbows bent, palms of hands flat on floor, fingers pointing forwards, legs in line with body, heels together.

Movements.—(a) (1.) Raise the back of the head towards the heels.

(2.) Lower the head towards the ground.

(b) (1.) Raise the back of the head towards the heels and bend the trunk backwards in the loins by nearly straightening the arms.

(2.) Lower the head and body towards the ground.

(c) (1.) Raise the back of the head towards the heels and bend the trunk backwards in the loins by quite straightening the arms.

(2.) Lower the head and body towards the ground.

Repeat the exercises six times.

Notes.—In (a) the head moves only, in (b) and (c) the head moves first and the trunk moves afterwards. In (a) the chest is kept on the ground throughout the movement; in (b) the chest leaves the ground in the latter part of the movement, but the abdomen is kept on the ground throughout; in (c) the chest leaves the ground, then the abdomen, and the body is raised by the straightened arms on the knees. These movements strengthen the muscles at the back of the spine, the trapezius group above and the erector spinae group below.

Exercise 7.—To get a good shaped and mobile abdomen.

Position.—Lying on the back in the position of attention.

Hands flat on the abdomen, left hand above the navel and the right hand below the navel.

Movements.—(a) (1.) Raise the head till the chin nearly touches the chest.

(2.) Lower the head to the floor.

(b) (1.) Swing in the front wall of the abdomen—(Abdominal Press).

(2.) Swing out the front wall of the abdomen—(Abdominal Release).

(c) (1.) Raise the lower limbs until they are at right-angles to the floor.

(2.) Lower the lower limbs to the floor.

Repeat the exercises from six to twelve times.

Notes.—The movements (a) work the upper part of the abdominal muscles, (b) work the middle part of the abdominal muscles, especially the transverse muscles, (c) work the lower part of the abdominal muscles.

Exercise 8.—To get the shoulders square and the shoulder girdle mobile.

Position.—Attention.

Hands (or fists) upon the hips.

Movements.—(1.) Move the shoulders forward.

(2.) Move the shoulders upward.

(3.) Move the shoulders backward.

(4.) Move the shoulders downward.

Repeat the exercise from six to twelve times.

Notes.—Move the shoulder girdle in a continuous circular movement, keeping the rest of the body as still as possible. Remember this exercise is for the movement of the shoulder-blades, not of the shoulder-joints. The shoulder-blades can be moved upwards, downwards, forwards and backwards around the chest, and can also be rotated upon themselves. This movement of the shoulder-girdle adds considerably to the usefulness of the upper limbs and should be fully developed.

CHAPTER IV.

THE SCIENCE OF APPRECIATION AND THE CONCEPTION OF THE BEAUTIFUL.

Purpose in movement and control of action in the art of expression are acquired by the science of appreciation. It is not possible to will the contraction of a muscle, but it is possible to will a movement in accordance with the idea that is formed of that movement by the mind. It is also possible to control our thoughts ; a current of thought can, as it were, be switched on or off at will, and the mind can be concentrated upon a train of thought or not according to the wishes of the thinker, and all other thoughts can, if so desired, be excluded.

Efficient expression is dependent upon concentration of thought upon the idea. The quality of the idea is influenced by the power of imagery, that is, the power of being able to see a clear picture of the idea with the mind's eye.

The power of imagery and of concentration must be cultivated by all who wish to excel in the art of expression, by the careful study of the science of appreciation.

The Power of Imagery. The mere idea of movement is not sufficient. It must be a full idea, full of the detail that comes of understanding, so that the picture formed in the mind is complete, and all its details painted with the strokes of a masterly mind that has spent time and care upon its production.

The conception of such a picture is not easily made, for it is the result of studious application to intellectual work ; competent teachers of any accomplishment state that it generally takes two or three years for the most promising students to conceive the ideas of movement, embodied in their work, in all their beauty. The sketchy outlines of the pictures of the semi-artistic are easily acquired and equally easily taught ; but the results cannot be anything greater than the incomplete performances which, although second-rate, seem to satisfy the ambition of too many of the public performers in this country.

In this connection Stevenson writes, "The artist works entirely upon honour. The public knows little or nothing of those merits in the quest of which you are condemned to spend the bulk of your endeavours. The merit of a certain cheap accomplishment which a man of the artistic temper easily acquires they can recognise and they value. But to those more exquisite refinements of *proficiency* and *finish* which the artist so ardently desires and so keenly feels, for which day after day he recasts and revises and rejects, the gross mass of the public must be ever blind This idealism in honesty can only be supported by perpetual effort."

The Knowledge of Self. The artist must have faith in himself, a faith that is proportionate to his powers of imagery, to his concentration of attention, and to his art of expression. Too great or too little faith in one's powers is antagonistic to efficiency. The real "artistic temperament" may be said to consist

of a co-ordination of these four important essentials : (1) knowledge of self, (2) the powers of imagery, (3) concentration, and (4) expression. It is usually applied to those who possess either of them to a marked degree ; the work is disappointing because of the weakness of one or more of the other three. Whatever the natural capacity of any one of them may be, it must be carefully nurtured and the other three developed up to the level of the more prominent one.

Everyone is annoyed with the man who has an undue amount of confidence in himself ; more blame should be bestowed upon those who, in spite of valuable possessions, are debarred from success from lack of virility in their work, which comes from depreciation of their own inherent qualities. Such students are an ever-present worry to themselves and to their instructors, for disappointment and discontent take the place of eurhythmic joy and happiness.

Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power.

Tennyson.

**Danger of a
One-sided Gift.**

The temptation to rely upon a one-sided natural gift is often too strong to allow the fortunate possessor to spend time and energy in the development of the other sides, and unhappy failure results, so that perhaps those are the more fortunate who possess a less marked talent in all four directions, each of which requires strenuous work to make it effective ; and this may be the explanation of the fact so often noticed by experienced instructors, that the apparently most promising students are outdistanced by those who possess an apparently small but many-sided talent, and in addition an infinite capacity for taking pains.

**The Eurhythmic
Instructor.**

The eurhythmic instructor should make a careful diagnosis of the powers and weaknesses of each individual student. He should map out a line of treatment whereby the weaknesses are transformed into strength, and the strength is carefully nurtured, the purpose always kept in view being the co-ordination of all four essentials. The inclination of the so-called artistic temperament, both in the instructor and the instructed, is to strengthen the powers and allow the weaknesses to take care of themselves, in direct opposition to the common knowledge that "the strength of a chain lies in its weakest link." The motto for the student is "Know thyself," for the instructor, "Know thy student."

"Insist on yourself" says Emerson "never imitate. Your own gift you can present every moment with the cumulative force of a whole life's cultivation ; but of the adopted talent of another you have only an extemporaneous half-possession."

The four essentials for success may be summed up as follows :—

**The Four
Essentials.**

- (1.) Know thyself.
- (2.) Power of imagery.
- (3.) Power of concentration.
- (4.) Art of expression.

The first three essentials belong to the science of appreciation, and are psychical, whereas the art of expression is mainly physical : but inasmuch as the workings of the mind can only be made manifest by movements of the body, and as the movements of the body are inefficient unless mind is present in them, it is not possible to call either the one or the other merely psychical or physical. They should rather be called psycho-physical and physico-psychical, for it should be noted once and for all, that the mental and the physical cannot be separated in artistic movement.

**Exquisite
Expression.**

Reaux has said that "poetry is the exquisite expression of exquisite impression," and this poetical definition may be applied with truth to eurhythmics, for the special charm about eurhythmic movements is the beauty of the refined action of an intelligent appreciation. Finished artists assert that it takes months and often years of patient study before any art can be properly appreciated. Appreciation must precede expression. In the criticism of a work insufficient regard is as a rule paid to appreciation.

Kinds of Appreciation.

There are at least three distinct kinds of appreciation—the superficial, the deep; and that intended by the artist. For instance, there is the superficial meaning, which the words of a poem make quite evident ; there is the deeper meaning, which only becomes manifest by study, and there is the meaning that the poet intended. The majority of readers are quite content with the superficial appreciation, few take the trouble to find out the deeper appreciation, and quite a small minority really discover the intention of the author, and enjoy the inner spirit and life of the poem. Mere printed words are lifeless, and it requires much intelligent study to endue them with a life. Carlyle says that "Poetry is musical thought—thought of a mind that has penetrated into the inmost heart of a thing, detected the melody that lies hidden in it The heart of Nature being everywhere music if you can only reach it"

The Five Senses.

Appreciation is obtained by the senses—sight, hearing, touch, taste, and smell. A picture is superficially appreciated by looking at it, music by hearing it, the quality of material by feeling it, fruit by tasting it, and scent by smelling it. For a deeper appreciation other senses

are brought into play.

A picture may be valued because of its financial worth or because of its beauty. A picture valuer will tell us the market price of a picture, and at the same time will confess that he knows nothing worth knowing about its artistic merit. By experience he can tell who the painter was and the price that his work realises. An artist will rave about the detail and finish of the work, and has little knowledge of the price. His experience is quite different from that of the expert valuer.

Experience.

Experience is derived from a fund of information stored up in the brain, which has been gradually accumulated by observation and deliberation. The expert has attended auction sales from his youth, and by buying and selling has found out definite points, which are invaluable aids to his judgment. The artist has attended picture galleries and has painted pictures himself, and his store of knowledge is of a totally different kind. A successful dealer in any line is one who can appreciate quickly the market value of his goods, and great experience is necessary to enable him to do this. An experienced man acts very differently from an inexperienced man, and so we are familiar with such expressions as "Look before you leap," "Second thoughts are best," "Fools rush in where angels fear to tread."

For full appreciation, man is much more dependent upon the development of what may be termed his inner senses than is generally admitted. **The Inner Senses and Appreciation.** Everyone believes that the five outer senses are invaluable aids to appreciation. They have accordingly been well named the five gateways of knowledge. But important as they undoubtedly are, they are insufficient, and a careful study of the inner senses is necessary for a satisfactory explanation of appreciation. Nearly everyone possesses a sense of "direction"; some people seem to possess a "telepathic" sense and others a "magnetic" sense. There is a scientific explanation of the power that enables us to know where we are and what we are doing, an explanation that cannot fail to be of great importance to all artistic performers. It is the outcome of the study of the inner senses, but too little is at present known about the "telepathic" and "magnetic" senses to include them in our investigation.

The Kinæsthetic Sense.

The inner senses are usually somewhat vaguely included in the "Kinæsthetic sense" by most writers, and this sense has even been called the "Queen of senses." It is, however, much better to separate the inner senses into four distinct senses :—

- (1.) The sense of happiness.
- (2.) The sense of fitness.
- (3.) The sense of movement-feeling.
- (4.) The sense of balance.

These four senses are obtained from impressions received from within the body, as opposed to impressions received from without the body by the five outer senses.

Happiness and Fitness. The senses of happiness and fitness are due to widespread sensations received from the sensibility that belongs to every living microscopical piece of protoplasm called the human cell. "Happiness" is more dependent upon the sensibility of the cells of the vital organs, especially of the organs of digestion; "fitness" is more dependent upon that proceeding from the general cells.

The well-known feelings of depression and irritability (due to indigestion, from the poisons which arise from food that passes too slowly through the digestive apparatus; or even from the unpleasant sensations due to the gases that are evolved by the undue fermentation set up in the food-stuffs that are kept too long in the intestinal canal when digestion is sluggish) are much more certain causes of unhappiness than we are apt to suppose; they make us imagine ourselves victims of all sorts of grievances, and "of the thousand natural shocks that flesh is heir to."

We say that we are "feeling fit" when we are free from the feelings of fatigue and boredom; that is, when all our cells are well nourished, and the waste that is produced by their work is removed and ejected from the body by the proper channels.

The Movement-feeling Sense. Besides the feeling obtained from stimuli applied to the nervous end-plates in the skin, there is another very important feeling-sensation arising from the ends of sensory nerves supplied to muscles and joints.

This feeling-sensation enables us to be aware of the position of different parts of the body in any movement. It is of inestimable value in expression, and, what is usually quite overlooked, of equal value in appreciation. The appreciation of those that can *do* must be deeper than that of those who simply *know*. An artist's appreciation of a picture must be greater than that of a man who cannot paint; likewise the appreciation of music by a musician must be deeper than that of a lover of music. In other words, deep appreciation is more surely acquired by doing, than by seeing or hearing—through the sensation that accompanies the doing, the sensation of movement or the movement-feeling sense.

The Sense of Touch in Music and Games. Is this movement-feeling the explanation of the sense of touch in instrumental playing? By what means does the performer make his instrument speak? How can Mendelssohn's "Songs Without Words" be interpreted by the pianist? How can a conductor show in his beat the interpretation of the score in front of him? How can the athlete shape correctly for the different strokes in his game of skill? What is it that gives poetry of motion to the dancer? Surely the answer is, "The movement-feeling sensation." This being so, what is the right place for this sensation in education? Is there not something wanting in the development of the mind and body of those who, although designated well-educated, are nevertheless devoid of accomplishments? Is it not possible that character is especially developed by movement-feeling? Hence the explanation of the sayings applied to everyday life: "Playing the game," "That's not cricket," "He's to be trusted because he's a sportsman," and finally, the very well-known saying, "The battle of Waterloo was won on the playing-fields of Eton." It is much more reasonable to believe that strength of character can be built up by the qualities necessary for the successful playing of our national games, than by the study of the classics. It is more than likely that the cricket professional is the most important tutor in the best conducted schools, and that his work largely consists of the development of the movement-feeling sensation. Professional teachers of games of skill, without any knowledge of the anatomy of muscular movement, insist upon the definite beginning and ending of each stroke, and carefully explain the movement-feeling of that beginning and ending as well as the sensation of movement that accompanies the stroke. A clever anatomist cannot play golf any better because of his intimate knowledge of the action of his muscles; he has to acquire the special sensation of movement-feeling in golf, in the same way as do other players.

Appreciation of a Poem.

Movement-feeling plays a most important rôle in the appreciation of a poem. By merely using the sense of sight a definite appreciation may be secured, superficial or deep according to the amount of intelligence brought to bear upon it. By hearing someone read the poem the appreciation often becomes changed in accordance with the ability of the reader. If the poem is read aloud a third kind of appreciation is acquired. Good writers, and especially poets, possess wonderful ears for beauty in sound, and have the power of painting wonderful word-pictures or sound-pictures ; so much so, that by the study of the sounds alone a true conception can be formed of the intention of the writer. The reproduction of these sounds, if made correctly, cannot fail to give full appreciation of the author's work. In reading aloud, especially when engaged in sound-painting, the movement-feeling sensation, as well as the senses of sight and hearing, is very much in evidence ; therefore reading aloud gives greater scope in development than silent reading or listening. Yet the teaching of sound-painting in schools is usually terribly neglected.

Sensation of Tone.

A good term for the movement-feeling sense in its application to vocal eurhythmics is the "sensation of tone"—the unmistakable feeling that exists in the articulatory apparatus when voice is properly produced, whereby the singer or speaker is fully aware that tone is present in his

voice, and he need not rely upon his sense of hearing or upon the opinion of his auditors. This "sensation of tone" should prove of the utmost value in the training of the voices of the deaf, in whom the movement-feeling sense is likely to be more acute, to compensate them partially for the loss of the valuable sense of hearing. It is the one and only means whereby the voices of the deaf can be made musical, inasmuch as it is the guiding sensation to the movements of the vocal apparatus for the production of tone in voice.

The Sense of Balance.

The movement-feeling sense—the sense that makes us aware of the position of any part of our bodies, both during and at the beginning and end of any movement—has a very intimate relationship to the sense of balancing, in which the semicircular canals attached to the organ of hearing play such a prominent part. It is quite probable that the change of pressure in the fluid of the semicircular canals gives a knowledge of the position of the head in any given movement, similar to the knowledge of the body obtained by the movement-feeling sense ; these two senses can be as well developed as the sense of touch by continued intelligent practice.

The Cerebellum and Co-ordination.

Many of the nerves of the semicircular canals on their way to the brain actually join the nerves of the movement-feeling sense ; together they pass to the nerve centres contained in the cerebellum (the smaller brain), which presides over the function of co-ordination, and especially that form of co-ordination which keeps the body well-balanced. From this we may justly conclude that it is by means of the cerebellum and the senses of movement-feeling and balance that we are enabled to keep ourselves in that state of physiological poise that is necessary for artistic movement and health. The movement-feeling and balance senses work in harmony, as is seen in walking, dancing, and especially in skating. The co-ordination of movement that is so necessary for the speaker, singer, and player of musical instruments, is actuated largely by the guiding sensations received from the tendons of muscles and from the delicate lining membranes of the joints, helped doubtless by sensations received from the skin overlying them. The junction of these nerves with the nerves from the semicircular canals on their way to the cerebellum (the organ of co-ordination) probably furnishes the basis for the explanation of the somewhat vague psychological factor which is of such vital importance to that exquisiteness of impression and expression that is the fundamental principle of eurhythm.

CHAPTER V.

THE ART OF EXPRESSION AND CONTROL.

The first step is to understand, the second to be able to express oneself, and the will or the volition becomes the dominant factor. In considering the will it becomes a question whether it is really engaged in promoting action or in restraining action. Is an expression ever initiated by the will? Is it not usually a response to an impression?

In the diagram of the brain the centres for movement exist in front of the fissure of Rolando. Here all movements of any part of the body begin, but are eventually carried out by nerve cells which actually communicate by means of motor nerves with the muscles that are engaged in the movement that is desired. These nerve cells are situated in a part of the nervous system that occupies a lower level in importance, usually in the spinal cord.

The Three Nervous Levels. The nervous system is said to consist of three levels. The highest is situated in the covering of the cerebrum, and the centres are named in the diagram of the brain; the middle, consisting of a definite collection of nerve cells called the basal ganglia, is situated in the middle of the cerebrum, and the lowest is situated in the medulla and spinal cord. The highest holds sway over the middle and the lowest; the middle commands the lowest. The highest level is working when we are fully conscious of our actions; the middle level is presiding when complex reflex-actions are performed, without apparently a conscious knowledge of the individual actions that constitute the movements—as in walking, writing, the playing of instruments, and such-like complicated movements. The lowest level is the chief factor when a response is directly made to a stimulus in an ordinary reflex-action, as in withdrawing a finger from a hot plate.

The more definitely reflex in character actions become the less are they dominated by the will, as they simply consist of a response to a stimulus, and are the natural outcome of that stimulus. Such actions are performed by the lower animals just as well as by man; and even those complex reflex-actions governed by the basal ganglia are possessed to a large degree by animals. Instincts are said by many writers to be complex reflex-actions whose centres are the basal ganglia.

Reflex-actions, either simple or complex, performed without conscious control, are not as a rule included among the acts of the will, but are said to be reflex (simple or compound) or instinctive, as opposed to the intellectual acts of the cultured mind, whose development is so largely dependent upon the central centres of speech or language.

The instinctive behaviour of an insect, either inherited or acquired by an adaptation to its environment, however wonderful, cannot be classed with the volitional acts of man, which are the outcome of reason and judgment, and form the thoughtful expression of an intelligent mind.

Will and Movement. Man cannot will the contraction of a single muscle, but he can will a movement. The initiation of that will is seldom if ever voluntary, for it can be traced to a stimulus from without arising from his environment,

or to a stimulus from within arising from an instinct. The will seems rather to take up an intermediary position, to be a governing factor in determining whether or

not the reply to a stimulus shall be allowed to have full play or shall be restrained. The adult possesses greater powers of restraint than the child, and the cultured greater than the uncultured. Thus the will appears to be much more engaged in inhibiting than in initiating action. The term "inhibition" is strongly suggestive of control. Does not the rider of a horse control by inhibiting, by stopping the animal putting into play all his muscular forces? It is seldom that the rider has to apply whip or spur to a healthy, spirited horse; he is engaged in checking, in restraining or modifying the horse's actions.

Our will thus appears to be our power to allow a full, a modified, or a negative reply to a stimulus, and our choice is apparently confined to the nature of a reply to a stimulus, rather than to the actual initiation of a movement.

Will and Thought.

We have, however, the power to will a train of thought, and can switch it on or off to suit our inclination with more or less difficulty, according to circumstances. It requires much effort of the will to keep the train of thought riveted upon a subject that is dull, for other thoughts are so ready to obtrude themselves and take possession of the attention, thoughts connected with a more interesting, entertaining, and pleasurable subject; it is difficult to keep them out. The highly-trained minds of the most self-controlled people, whose will is strong enough to enable them to be sufficiently interested in the subject to give their whole attention to it when they choose, are able voluntarily to switch on a special train of thought and exclude for the time being all other thoughts.

Motive.

There must, however, be a motive which primarily prompts the desire for the necessary interest and attention, so much so that many authorities give the highest place to motive or desire in its relationship to volition. The deciding factor of the level of attainments of normal individuals (geniuses and fools excepted) is the motive that prompts the interest, the zeal that is necessary for duly fixing the attention upon the train of thought which will eventually culminate in that volitional expression of movement that we are wont to call a choice of movement.

Idea of Movement.

We have also a definite power in connection with the formation of the idea of the movement; that is to say, we can formulate a picture in our minds of the quality as well as of the quantity of the movement; the character of the resulting movement is thereby materially influenced by inhibition.

Picture the movements in a game of skill as performed by a novice and a professional, the movements made in a game of cricket at Lord's and those made in playing "bat and ball" on the village green. In what manner are these diametrically-opposed styles of movement influenced by the will? The chief action of the will exercised in "bat and ball" is in the choice between "letting-go" and "not letting-go" at the ball. But in cricket there is so much skill used that the mind may be said to be projected into every movement. The onlooker can read with ease the intentions of batsman and bowler in their movements; this is why a game of skill is so interesting to those who are well educated in its practice and principles.

Poetry in Motion.

The quality of the will of the trained player is on a very much higher level than that of the untrained player. The trained player has a greater choice of strokes, he possesses a cultured idea of movement, so that he fully realises the exact meaning of the phrase "poetry in motion." This phrase has been too exclusively applied to dancing, even to forms of dancing in which the movements are anything but poetical—dances composed of inartistic acrobatic feats which interfere so much with the physiological poise of the body as seriously to endanger the health of the performer. "Poetry in motion" is ever present in the strokes made by the best exponents of our valuable national games of skill—and the qualities of the movements that stand out most prominently, besides the presence of the mind in the movement, are elasticity and

ease, smoothness and firmness, conservation of energy, masterfulness, all of which can be summed up in the one word co-ordination, which of course includes both physical co-ordination (that is, the harmonious working of all the bodily forces), and mental co-ordination (that is, harmony of mind and body, or eurhythmsics).

The player is trained gradually to conceive that beauty in his idea of movement which eventually he learns to put into his expression of it. He gradually absorbs the true principles underlying the science and art of eurhythmsics which is so aptly described by Christiani as follows :

“Art has as its fundamental law, the law of beauty; beauty presupposes symmetry, symmetry is visible rhythm, rhythm is audible symmetry or symmetrical movement, symmetrical movement is the ground element of music.”

Law of Movement. The law of movement, as we have already discovered, is dependent upon the law of “the reciprocal innervation of muscle” (Sherrington’s law), and the main principle at work is the inhibition of the antagonistic muscles in effecting co-ordination in movement. This produces efficiency,

grace, and beauty in the symmetrical movement, which Christiani says forms the ground element in music, as opposed to the stiff, rigid, jerky, unfinished, inelegant, unhealthy movements involved in the jerk, vigour, and wasted energy that are so eagerly sought by the teachers of antagonism in movement. The development of a will which allows of a smart, vigorous response to the sharp stimulus of a snappy command is particularly easy and showy, and unfortunately as easily commands the acclamation of the untutored public. The plane occupied by that will is very little, if any, higher than the lowest, and is common to animals as well as to man. Many of us can remember the sudden jerk forward of the ‘bus horses in response to the stimulus received from the conductor’s bell.

The power of the will to concentrate the attention upon the conception of beauty in the idea of movement, and to carry it out in all its efficiency in the execution thereof in games, exercises, music, and all accomplishments, places the will of the trained or self-controlled man on the highest possible plane. It is an artistry controlled by sentiment.

The Guiding Sensation of Movement-Feeling. “We cannot know things by words and writing, but only by taking a central position in the universe and living in its forms.”
 “None any work can frame
 Unless himself becomes the same.”
 “Speak what you do know, and believe, and *are personally in it.*”

Emerson.

In learning by doing and “being in it” the movement-feeling sense is developed and becomes a guiding sensation for the control of the movements that are necessary for efficiency in expression. Theoretical knowledge alone is insufficient, for it cannot make up for the absence of the guiding-sensation of action. The mere knowledge of the machinery of a motor-car will not enable a motor-car driver to make minor repairs on the road; he must have had some experience as a mechanic, and must possess the guiding-sensations that will give finish to his work. This guiding-sensation of feeling-movement gives a finish to appreciation; the musical voice, produced by the sensation of tone, enables the speaker to reproduce the sound-pictures of the artistic author, and also enables the speaker more fully to appreciate the wonderful skill of poets.

Reading Aloud. If this theory of the relationship of the movement-feeling to appreciation and expression were put into play in education generally, how much better the final results would be, and how much more interesting would be the getting there. Take as an example the reading aloud of poetry. A child is given a poem to study, and is told to work out its fullest appreciation, namely, that intended by the writer. If there is anything beyond the child’s appreciative power, it must be first of all carefully explained. The illustration by a drawing of the conclusions arrived at is to be encouraged in every way, and originality on the part of the child carefully fostered; the child is thinking

all the time, and his brain is being developed. If in a reading-lesson in school the class were given a short story or a short poem to study for a certain specified time, and then a certain number asked to read it in such a way as to make the others understand what they think the meaning is, it would inevitably lead to healthy criticism on the part of the children themselves, the teacher would be questioned on many points by the children, and a lively interest would take the place of the dull, rigid attention which too often has to be enforced by threats. It may be objected that the children could not be permitted to read aloud, and so would lose one of the chief means of getting a full appreciation. But why should they not all read aloud simultaneously, each taking his own time? There would be a great deal of noise, but what does that matter, if they are at work and are enjoying that work? It is a method used in some schools—it works admirably, and the children thoroughly enjoy themselves. Another good method is one that is very commonly used, and that is to get the child to tell the story in his own words. The teacher would save the time that is usually wasted in keeping order.

Conviction and Self-Control. The art of reading aloud is so largely dependent upon the sensation of tone that it too relies upon the movement-feeling sense. Just as in painting a picture the fingers are guided by movement-feeling, so in word-painting the articulatory apparatus is controlled by the same

sensation. Conviction is the goal of the speaker. Gabbling, mouthing, ranting, drawling, affectation, or sing-song cannot be convincing; the idea to be expressed must first of all be made part of the speaker, and in its expression every movement must be so controlled that it exactly harmonizes with the idea. The speaker for the time being becomes the author; he has absorbed the ideas of the writer, made them his own, and is prepared to express them as if they were really his own. If he can so control his movements that they exactly fit the ideas, he cannot fail to be convincing. He makes the ideas clear to his audience, and they feel that they are sharing them with him; he thus becomes at one with the ideas, and through the ideas with the audience, and perfect rhythm results from this eurhythmic action. The speaker appears to be perfectly at ease, and the audience are at ease too—they are mutually pleased.

Where is the man who has such perfect control over his body that he can make all his movements correspond exactly with what he has in his mind? Usually there are signals of distress hung out, in the shape of extraneous sounds made while seeking for the right words to express the idea. The very common but meaningless "er" sound, continually being uttered, adds discord and interferes with conviction; it is a confession of inability to find suitable words.

A peculiarity of pronunciation or an unpleasant voice destroys conviction, unsuitable movements of the limbs or the face are very distracting, and an improper attitude most misleading. "But of all unfortunates there is one creature (I will not call him man) conspicuous in misfortune. This is he who has forfeited his *birthright of expression, who has cultivated artful intonations, who has taught his face tricks, like a pet monkey, and on every side perverted or cut off his means of communication with his fellow-men*. The body is a house of many windows; there we all sit, showing ourselves and crying on the passers-by to come and love us. But this fellow has filled his windows with opaque glass, elegantly coloured. His house may be admired for its design, the crowd may pause before the stained windows, but meanwhile the poor proprietor must lie languishing within, unchangeably alone."*

There are so many important details to be observed that it seems to be almost impossible in theory at any rate to be convincing; but whereas perfection is really unattainable, such good results can be acquired that with practice almost anybody can be convincing up to a certain point, and that point varies in exact proportion to his powers of self-control. The control of the voice itself is the most powerful and usually the most neglected form of self-control. Actors spend considerable time in learning gesture, but in spite of much charm and grace of movement fail really to reach the hearts of the audience from failure in voice-control.

* From "Virginibus Puerisque" (R. L. Stevenson).

The Self-Control of the Actor. The earnest actor spends hours of study in familiarising himself with the ideas of the playwright, until he has so thoroughly absorbed them that he has made them part of himself by the science of appreciation. He

has read the words of his type-written copy, and thought out the various meanings of the different phrases ; he has heard the play read by the author, and has asked the author for an explanation of the meaning of those phrases to which many meanings can be given ; he has attended rehearsals, and has been further instructed by the producer, who has studied the play as a whole and has worked out harmony in movement and position for the cast as a whole ; he has read the words aloud, and by all these methods of appreciation has arrived at the precise meaning of the part that he has to act. When, in witnessing acting, it can be felt that the part could not possibly have been played in any other way, especially if it is played in the simplest way, there is very little doubt that the acting is exceedingly good. Can the audience be really in sympathy with the actor unless that actor is in sympathy with the meaning of his part ? Neither melodrama nor the mere saying of so many words is acting ; they are the two extremes of overdoing and underdoing the part.

The real meaning becomes clear to the audience when voice, gesture, and attitude are in harmony with it. The make-up and the scenery are invaluable aids, but the meaning is independent of these, for the reciter in ordinary clothes and in an ordinary room can make the audience visualise both ; this is one reason why reciting is often much more difficult than acting. The actor rehearses the play with his fellows for many hours a day for weeks, and in his own particular room practises before a mirror, so that he is at the same time both actor and audience. If a gifted man has to expend so much time and trouble on the production of a part in a play, how can anyone expect to stand up before the public and convey the meaning of a writer by reading or reciting, till he has worked at it for many hours ?

The Self-Control of Public Speakers. The harmonizing of voice, face, and body with meaning is just as necessary for a teacher as for a public speaker, and conviction is impossible without it. The actor spends far too little time upon the culture of the voice, which is the most important means of expression, and hence is too much given to over-gesticulation to make up for loss of vocal power. Public speakers are just beginning to realise the importance of vocal training for speaking, as they have found from bitter experience that the long hours of talking they are called upon to give cannot with impunity be accomplished with an untrained voice ; they constantly lose their voices from the prolonged strain of misuse. A trained voice can do an enormous amount of work because in the training eurhythmic movement is learned, and maximum results are obtained by a minimum of effort ; also, eurhythmic movement produces tone, and by tone the meaning is helped to such an extent as to make teaching much easier.

Voice, Meaning, and Feeling. In public speaking three fundamental principles have to be observed if the speaker wishes to be convincing. He must paint sound-pictures of his ideas by a perfect pronunciation. This may be placed under the heading of voice. His meaning must be quite clear, and his sentiments must be decided. Voice, meaning, and feeling are the three fundamentals of public speaking, voice and feeling being used to intensify meaning, meaning being the all-important object of speech. Singers are inclined to make voice too prominent and to obscure their meaning thereby, but speakers are remarkable for their poorness of voice, and this is even apparent in professional speakers, reciters, and actors, who rely too much upon gesture. It must be clearly understood that by voice is meant tone, not noise ; noise is fatal to meaning. It has often been asserted that if a reader understands the subject, and at the same time feels what he is reading, his reading must be good. This, like many other sayings, is true of those cultured individuals whose powers of appreciation and expression are fully developed ; but the inexperienced, by making use of the rule, usually give an exhibition which is futile and ridiculous. Intelligent understanding and feeling produce cultured appreciation, but do not ensure art in expression.

Appreciation and expression are as different as theory and practice ; the art of expression is the practice of the science of appreciation. Educated people have no trouble in getting an appreciation, its quality being in proportion to the intelligence and care expended on it ; the expression of that appreciation needs a well-controlled body, a body that eurhythmically responds to the intellect. The ready criticism of literary people who have never studied expression is really valueless ; from not being able to do they lack the requisite amount of knowledge. There is nothing so irritating to the practical man as the fault-finding of the mere theorist. Theory without practice is just as misleading and dangerous as practice without theory : for the intelligent action of eurhythm both are absolutely necessary.

"The difficulty of literature is not to write, but to write what you mean, not to affect your reader, but to affect him precisely as you wish."—Stevenson.

The expression of the meaning is effected by the control of the feelings and of the voice, face, and body. Appreciation is the intelligent use of experience (of knowledge and of feelings), expression is the intelligent control of our movements (movements of vocal apparatus, face, and body). Appreciation is finding the meaning for ourselves, expression is the giving it to others. If others can be made to see it just as we do ourselves, a bond of union is excited called sympathy, which makes the speaker convincing, and eurhythm exists between the speaker and his audience.

Vocal movement conveys this sympathy better than any other movement,

Euphonetics.

and so the control of voice is the most important element in expression.

Control of voice includes vocal tone or euphonetics, that is, the musical pronunciation of a language. Vocal tone is the outcome of co-ordination of movement of all the vocal muscles—the breathing muscles, the vibratory muscles, and the articulatory muscles. Euphonetics includes the study of sounds or phonology whereby the full complement of the component parts of compound sounds are produced. All the chief vowel sounds are particularly rich in partials, which give them their characteristics and their music, and the blend of vowels into diphthongs still more enriches their musical quality.

"If you would have me weep, begin the strain,
Then I shall feel your sorrows, feel your pain ;
But if your heroes act not what they say,
I sleep or laugh the lifeless scene away.
The varying face should every passion show,
And words of sorrow wear the look of woe ;
Let it in joy assume a vivid air ;
Fierce when in rage ; in seriousness severe ;
For Nature to each change of fortune forms
The secret soul, and all its passions warms ;
Transports to rage, dilates the heart with mirth,
Wrings the sad soul, and bends it down to earth.
The tongue these various movements must express ;
But, if ill-suited to the deep distress
His language prove, the sons of Rome engage
To laugh the unhappy actor off the stage.
Your style should an important difference make
When heroes, gods, or awful sages speak ;
When florid youth, whom gay desires inflame ;
A busy servant, or a wealthy dame ;
A merchant wandering with incessant toil,
Or he who cultivates the verdant soil :
But if in foreign realms you fix your scene,
Their genius, customs, dialects maintain.

And if the mind with clear conceptions glow,
The willing words in just expressions flow."

Horace's "Art of Poetry"

(translated by Philip Francis).

CHAPTER VI.

THE CEREBRAL APPARATUS OF SPEECH.

The area of the brain that is especially interesting to students of vocal eurhythmics is that which belongs to speech, and may be called the "speech zone." It exists on one side of the brain only—on the left side in right-handed people, and on the right side in left-handed people. The cerebral apparatus of speech consists of four distinct centres, two of which are sensory and two are motor, and all four centres are engaged in the understanding and memory of words. The two sensory speech-centres are connected with the centres of sight and hearing, and the two motor speech-centres (writing and speaking) with the centres that control the movements of the hands and the mouth. Broca's discovery in 1863 of the well-known special one-sided centre for speaking words was the first step towards cerebral localisation, that is, the discovery that special parts of the brain have definite work to perform. A description of the speech zone will enable us to understand how language has made man infinitely superior to other animals through the possession of the speech centres, which are peculiar to man. A parrot may be taught to repeat words by imitation, but they are devoid of meaning and do not express judgment; an imbecile human being can be taught to do as much.

Instrument of Thought.

Language is the instrument of thought, for the intelligent man not only writes and speaks in words, but he also thinks in unspoken words, which he faintly hears, while he is thinking. Intelligence has grown with speech, and has reached the highest development in man. An animal such as a dog, which cannot speak, but can make sounds that possess some meaning in answer to human sounds, shows signs of intelligent behaviour (the result of being able to feel, to remember, and to put "two and two" together); the intelligence of man can be developed to an infinite degree, because he possesses an efficient vocal apparatus, a marvellous vocabulary, and limitless powers of detecting minute differences in sounds.

Words are the instrument and even the constructor of thought. There is no special centre in the brain for thought or intelligence. The whole brain is at work in thinking, for the work of the thought cell includes memory and association, and it requires sensation as a stimulus and expression as a purpose.

The Understanding-word Centres.

Speech, whether written or spoken, is a sensori-motor act (feeling and response). We see the written or printed language, or we hear words spoken or unspoken, and we write or speak them. What the eye sees the hand can write, and what the ear hears the mouth can speak, but between the seeing and hearing of words and the acts of writing and speaking them, the mind can by the use of its instrument of thought—language—conceive, imagine, and create, and thus modify the resulting action. Seeing and hearing belong to the impression cell, and intelligence, which is so intimately associated with language, to the thought cell.

It is the function of the impression cells to understand words that are seen and heard. The thought cells, drawing upon their storage of knowledge acquired by past experiences,

modify that understanding, so that the expression cells used in writing and speaking are enabled to express words that convey in thoughtful phrases a meaning that is pregnant with an intelligent understanding.

Exquisite impressions arise from the fullest understanding of words that are seen and heard; exquisite expressions from the fullest understanding of words that are written or spoken. Both the impressions and expressions are made still more exquisite by the deepest action of the thought cell (that is, by the fullest understanding of the words that are already stored in the association cells, the result of previous experiences and memories, whereby reasoning and judgment can be brought to bear upon the impressions as well as upon the expressions).

The Speech Zone.

The special one-sided centre for understanding words that are seen exists in the speech zone just in front of the centre of sight (which occupies the back part of the brain). The special one-sided centre for

understanding words that are heard exists in the speech zone just behind the centre for hearing (which occupies the part of the brain lying just above the lobe of the ear). A little above and in front of the lobe of the ear lies Broca's convolution of the brain, which is the special one-sided centre in the speech zone for understanding words that are spoken; just above this again lies the special one-sided centre in the speech zone for understanding words that are written.

The association cells (the thought cells) occupy the remainder of the brain that is not occupied by the sensory or motor centres (impression and expression cells, which, roughly speaking, take up about one-third of the cerebral cortex).

The exquisite speech of vocal eurhythmics is obtained by the development of the understanding of words that belong to (1) the sensations of sight and hearing, (2) the reasoning of the thought cells, and (3) the actions of writing and speaking. These are the educable centres of the brain.

Music-Comprehending Centre.

It is more than probable that other special centres exist in this speech zone that have not yet been definitely discovered: special centres for the understanding of words in different languages, and closely allied to these a special centre for the comprehending of musical sounds.

Surely there must be a special centre for the understanding of words through the sensation of feeling, corresponding to the movement-feeling sense—one of the four inner senses—which plays such an important rôle in the “sensation of tone,” and is therefore of such incalculable value to lovers of music.

“Visuals”; That there is an understanding belonging to sounds that are felt through the movement-feeling sense belonging to the sensation of tone,
“Auditives”; is evident from the fact that it is the practice of neurologists to speak
“Motors.” of “Visuals,” “Auditives,” and “Motors,” that is, of people who understand words chiefly by seeing them (visual word-understanding centre), those who understand chiefly by hearing them (auditory word-understanding centre), and those who understand chiefly by feeling them through movement (movement-feeling word-understanding centre).

Unfortunately there does not seem to have been a pronouncement of the discovery of this one-sided movement-feeling word-understanding centre by a neurologist, although eminent neurologists usually allocate a large area of the brain to the double-sided movement-feeling centre.

It is not supposed that any one of these classes of people uses any one of these special senses to the exclusion of the other two, but it is supposed that one special sense predominates, otherwise they should be classed as indifferents.

As an illustration, take the understanding of the familiar word "home." Some will argue that they get the fullest appreciation of its meaning when they see it in print, others, when they hear it feelingly spoken, but few realise the added appreciation that comes from speaking it correctly. No sooner is that word musically pronounced than a much fuller appreciation of the old ballad "Home, sweet home" becomes evident. The word means (or should mean) so much to an Englishman, and the understanding of its meaning is much more dependent upon the movement-feeling sense than is apt to be imagined.

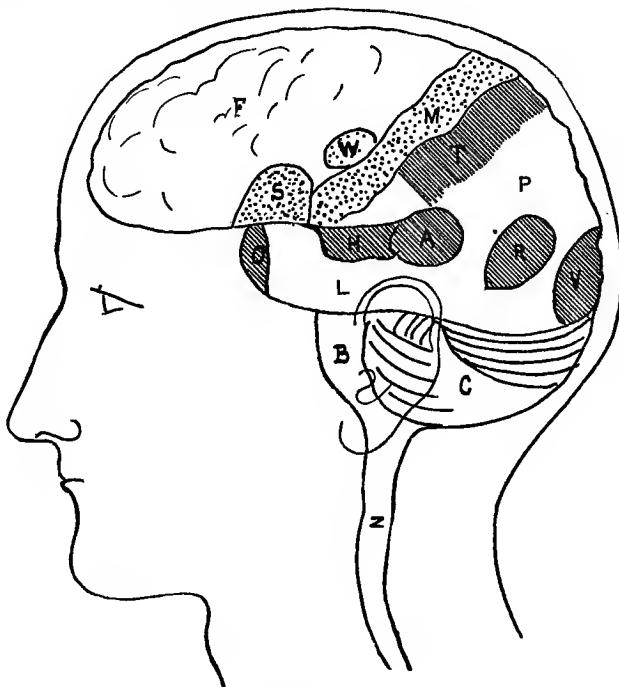


FIG. 14.

DIAGRAM OF LEFT SIDE OF THE BRAIN, SHOWING MOTOR (DOTTED) AND SENSORY (STRIPED) CENTRES.

- | | |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| M. Motor centres for movement of body: double-sided. | R. Sensory centre—reading—visual word centre: one-sided. |
| T. Sensory centre—tactile and movement-feeling: double-sided.
(The line separating M from T represents the fissure of Rolando.) | A. Sensory centre—auditory word centre: one-sided.
C. Cerebellum. |
| W. Motor centre—writing: one-sided. | B. Medulla or bulb. |
| S. Motor centre—speech: one-sided. | N. Spinal cord. |
| O. Sensory centre—taste and smell: double-sided. | (The line separating S from O and A is the fissure of Sylvius.) |
| H. Sensory centre—hearing: double-sided. | F. Frontal association centre. |
| V. Sensory centre—sight: double-sided. | L. Temporal association centre. |
| | P. Parietal association centre. |

The general term "Aphasia" is applied to defects of speech due to **Speech Defects.** failure of any of the special centres in the speech zone of the brain. If due to failure of the sensory centres it is called sensory aphasia, and people suffering from sensory aphasia are said to be "word-deaf" or "word-blind." Motor aphasia due to a defect in the writing centre is called "agraphia," which means an inability to write, and motor aphasia due to a defect in the speaking centre (Broca's convolution) is called "aphemia," which means an inability to speak. Defects of speech such as stammering or indistinct utterance are due to defective working of the vocal apparatus itself, usually from inco-ordination of its muscular movements.

Value of Auditory Word Centre. A child has not to learn to see, but it has to learn to read by associating certain sounds with certain meanings and certain designs. The designs form the alphabet; the letters or sounds, formed into words and phrases, make the language which can be written (writing centre) or spoken (speech centre), seen (reading centre) or heard (auditory word centre). Of these centres probably the auditory word centre is the most valuable from the point of view of intelligence, as thinking is performed by it; it is a well-known fact that deaf mutes are much less intelligent than the blind. But although in most cases it is easier to educate the word-hearing centre, the word-seeing centre should not be neglected, as necessarily far better results will be obtained by relying upon two avenues and storehouses of information than upon one, both vision and auditory memories for words being called upon in speaking and writing.

The music comprehending centre is probably quite close to the auditory word centre, and performs the same function for the musician as the auditory word centre does for the writer.

It is quite possible for the composer of music to think out his score by means of his music comprehending centre, but he is likely to avail himself of the extra help to be derived from playing an instrument (a centre corresponding to the writing centre), or by humming (a centre corresponding to the speaking centre).

Likewise much additional help to the understanding of language is gained by the student who writes, and still more by those who read aloud.

Psychologists set great store upon the auditory word centre, and state that it is probably the most important centre in the brain. With its **Movement-feeling** near neighbour, the music comprehending centre, it is the origin of all **Word-understanding**. Thought and music, oratory and intelligence. We think in words that are faintly heard, and conceive music in sounds that are faintly heard, and even read silently in words which, although unspoken, are yet faintly heard. Psychologists apparently have ignored the additional powerful means of appreciation to be obtained by the movement-feeling in connection with doing. Deep as the appreciation of a poem may be from the faintly heard sounds when reading it silently, it becomes much deeper still when the words are spoken aloud. A musician studying a score silently obtains great knowledge thereby, but he has not completely mastered it until he has played it, and put into action his movement-feeling sense. We learn much more about an object by handling it than we can by simply reading about it or hearing about it, that is, "learning by doing." The knowledge of the practical man is sounder than that of the mere theorist.

All these arguments make it more and more evident that there is an urgent need for the discovery of the movement-feeling word-understanding centre, both as a sensory avenue and as a guiding sensation to action. Surely it would be a possible explanation of the "sense of touch" in music, and of the "sensation of tone" in singing and speaking, and in a wider application of the meaning of "real education" as opposed to that which is the result of learning by imitation, and by the empirical methods that are so much in vogue in all branches of instruction. "Manual training," now regarded as an important subject in general education, is a practical step in the right direction, in that it develops the movement-feeling sense.

"This sense of touch, of feeling, is the basis on which the other and higher senses rest."—*Aristotle*.

Is there a Breathing Centre for Voice ? The centre for the "breathing of repose" is situated in the Medulla Oblongata at the base of the brain. It is automatic; the breathing is carried out by the involuntary action of the breathing muscles, and goes on even during sleep. Thus life is maintained, the blood is supplied with oxygen, waste organic matter converted into simpler compounds, and carbonic acid gas, water, and urea are removed with each respiration. It is the effect of this waste in the blood going to the Medulla that causes the nervous cells forming the centre for breathing to send off a stimulus. This stimulus goes to the muscles that cause the chest to enlarge and so draw in a fresh supply of oxygen with the breath of air taken into the lungs. This happens regularly fifteen times each minute in health, quite unconsciously.

In "breathing for voice" a conscious action takes place. It is possible (1) to regulate the quantity of air taken in for any given phrase, and (2) to regulate its quality (for it can be taken in sparingly or wastefully, smoothly or jerkily, artistically or crudely) at will. To do this there must exist a special breathing centre, a higher conscious centre in the brain which can control when necessary the lower unconscious centre in the Medulla.

This voluntary centre controls the voice as well as the breathing for voice, in that the regulation of the quantity and quality of the expiration directly sets up vibration in the vocal cords (phonation), and indirectly affects the quality of the sounds—vowels and consonants—brought about by articulation. It must be connected by association fibres with the centres of phonation and articulation in the speech area of the brain.

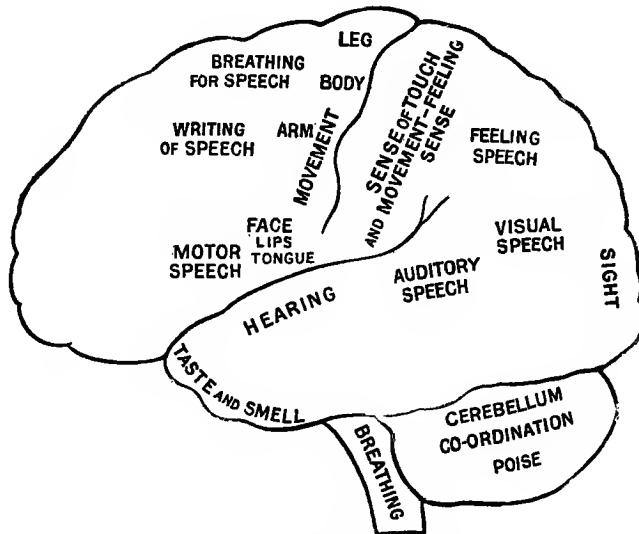


FIG. 15.—THE SPEECH-CENTRES.

It is probably situated just above the writing centre immediately in front of the part of the brain that presides over the movements of the trunk.

The addition of this centre will add a motor centre, a breathing-word centre corresponding to the additional sensory movement-feeling word-understanding centre. The cerebral apparatus of speech by these additions consists of six centres: three sensory (1) connected with the centre of sight (visual word centre), (2) connected with the centre of hearing (auditory word centre), (3) connected with the centre of movement-feeling (motor word centre), and three motor (1) connected with the movements of the face (speech centre), (2) connected with the movements of the arm (writing centre), (3) connected with the movements of the trunk (breathing for voice centre).

Phonation (movements of vocal cords) and articulation (movements of muscles of articulatory apparatus) are especially dependent upon the centre for hearing, as writing (movements of muscles which move the pen) is especially dependent upon the centre for sight. Why then should not the breathing for voice centre be especially dependent upon the centre for movement-feeling?

If these two new centres (which from a practical point of view undoubtedly seem to exist) are permitted, it makes the physiological explanation of many of the complex psychological problems in connection with dramatic singing and speaking much clearer. As far as language and so intelligence are concerned, the new centres are probably unilateral; but if applied to general physical movements they are more likely to be bilateral. Intelligence—the result of the work of the unilateral word-understanding centres—has made the vocal apparatus the chief agent of the mind, by bringing the voluntary movements of breathing for voice and articulating

for voice directly under the influence of the word-understanding centres of the mind. These direct voluntary influences by controlling the involuntary movements of the vocal cords have developed the cry of the infant into the correct phonation of the artist.

Intelligence controls the emotions as well as the physical movements of the performer, and raises them to a higher level. The artist's mind as well as body becomes artistic and eurhythmic; physical movements controlled by intelligence become finished and artistic; emotions controlled by intelligence become finished and real. Real or intellectual emotions are something more lasting, vitalising, and certain than the evanescent outbursts of uncontrolled feelings; they belong to a higher grade of consciousness and are better described as sentiments. Sentiment and artistry are the mental and physical ideals of the artist; the love of truth stimulates the desire for the acquisition of the requisite amount of knowledge necessary for the correct appreciation of the beautiful; the love of truth is the motive that drives ever on and on to the intention of attaining the beautiful; and both, resting upon the solid foundation of right, develop the character by encouraging habits of self-control, whereby the egoistic emotions are subdued first of all by the social emotions until they finally become sentiments.

Socrates has said that "self-control is an exact science, and when discovered the whole world may become virtuous."

The egoistic emotions are the lower feelings belonging to the ego or self, the primitive emotions engaged in the love and preservation of self. They comprise fear and anger, love of activity and power, love of approbation and self-esteem; they are the first to be developed, and form the sole welfare of early life. As the social instincts develop, the child becomes less self-centred, thinks more of others, and then love, respect, and sympathy begin to control temper, selfishness, and aggrandisement. Self-sacrifice by "doing unto others as we would they should do unto us" conquers selfishness—sympathy supplants self till at last through intelligence sentiment reigns supreme.

There may be said to be three levels in emotion, (1) the egoistic emotions, (2) the social emotions, (3) the true sentiments. This somewhat corresponds to the old Greek idea of the three parts of a man, (1) the soma or body, (2) the psyche or soul, and (3) the phrene or spirit.

Sentiment is produced by the correct development of the speech zone of the brain, and makes man superior by its possession to all the other animals. It may be said to have three attributes—the intellectual, the æsthetic, and the moral; love of the truth, the beautiful, and the right. It is the aim of the educationist, the artist, and the statesman; the goal of the minister, the doctor, and the lawyer; the foundation of religion, health, and citizenship; it develops character, art, and brotherhood.

"All men live by truth and stand in need of expression. In love, in art, in avarice, in politics, in labour, in games, we study to utter our painful secret. The man is only half himself, the other half is his expression."

"This power of expression, or of transferring the inmost truth of things into music and verse, makes Shakespeare the type of the poet and has added a new problem to metaphysics."—*Emerson*.

The public speaker or singer controlling his emotions by sentiment cannot fail to carry conviction to his audience, for his thoughts are felt as well as heard, his words are full of fire as well as meaning, he is understood by his hearers as well as he understands himself, the control of self controls the others, and harmony prevails, for all are at one—that is, all are convinced by the sentiment of the performer.

Sentiment produces artistry in movement, it leads and therefore is evident in every phase of vocalisation, facial expression, gesture, attitude, and even during the pauses. It is the master of the situation, and so creates the proper atmosphere. It is rhythmic in purpose and in effect, and so the personality of the performer reaches the uttermost corner of the auditorium.

This creation of atmosphere and the obtrusion of the personality is often erroneously called inspiration. Inspiration is much too ethereal to be relied upon in a public performance, it is even more unreliable and undependable than is emotion. Actors can never be really first-rate who rely upon inspiration and emotion instead of sentiment for their results. Sentiment

is as certain as inspiration and emotion are uncertain. An actress who is really hysterical is not acting, neither is an actor who is really angry, acting. Who knows what a really hysterical woman or a really angry man is likely to do next?

"He only is free who can control himself."—*Epicetus*.

Artistry strengthens sentiment, and is strengthened in return by sentiment, mind, and body reacting one on the other. Impression impressed by expression, and expression impressed by expressing impressions. The science of appreciation perfected by the art of expression, and the art of expression finished by the science of appreciation. The science of appreciation developed by the movement-feeling sense, and the art of expression actuated by feeling the movement. The movement-feeling sense (unit flowing into unit), consisting of the sense of the feeling of continuity, sense of balance (equilibrium), the sense of co-ordination (including the sense of tonicity, the sense of proportion—the maximum result with the minimum of effort—and the sense of the "reciprocal innervation of muscle") being predominant in the art of expression through the science of appreciation, makes the science of appreciation doubly effective.

All this can be summed up in the one word, rhythm, which includes both artistry and sentiment and involves a full consciousness of what we have to do and how we are to do it, a full consciousness of the purport of the work and of the guiding sensations that will enable us to do the work in the best possible manner. The conductor knows his score, and by the guidance of his movement-sense can in the rhythm of his beat indicate to his orchestra the truth of his interpretation of the score.

The "life and spirit" of the performance still further enhance the depth of the conception of the creation, and this enhanced conception creates still more life and spirit in its performance.

The health and wealth of the mind are just as dependent upon the body for its support as is the body for its health and wealth upon the mind. The mind gets to know what is going on outside the body, through impressions received by the outer senses of the body, and what is going on in the body through impressions received by the inner senses of the body. The body influences its surroundings by expressing the thoughts of the mind in action.

CHAPTER VII.

THE SOUNDS OF THE ENGLISH LANGUAGE.

For the practical purpose of "vocal eurhythmics" it seems advisable to arrange the sounds of the English language in the order of their musical merit as follows : The six fundamental sounds usually called vowels :

oo oh aw ah ay ee, as in the words
soon, so, saw, psalm, say, see,

and the four combined sounds usually called diphthongs :

ou I oi U as in the words
vow, vie, voice, view.

Each of the six fundamentals possesses a subordinate sound :

i ē ä ö üh öö as in the words
sit, set, sat, sod, sung, soot.

The three nasal sounds, "m," "n," and "ng," possess very great musical value, and should be given a very high position. The sounds "w," "y," "l," and "r," are very musical if properly treated. There is distinct music to be obtained from the voiced parts of the following sounds, "b," "v," "th," "d," "z," "zh," "j," and "g," but apparently none at all from the sounds, "p," "f," "th," "t," "s," "sh," "ch," and "k."

Most of the sounds in the English language are contained in the first four lines of Gray's "Elegy" :

äh üh U öh üh ē ö äh i äy
The curfew tolls the knell of parting day,
Th L Ng H D I S EE
The lowing herd winds slowly o'er the lea,
ou N M üh P Z W R Y
The ploughman homeward plods his weary way,
ä V T K öö
And leaves the world to darkness and to me.

The sounds made by the "aw," "öö," and "oi" shapes and the "sh," and "ch" articulations are absent.

The nasal sounds are very musical, and must be placed high in the list of values of musical sounds. The subordinate vowel sounds are certainly musical, but by reason of their crispness and somewhat *staccato* tension occupy a lower position. The semi-vowels, consisting partly of obstructions to the vibrating air, must be placed next in order of merit. The voiced part of consonants is rich in music, but the friction caused by the obstruction, either complete or partial, offered to consonants produces sounds which should be termed noises rather than music, their real value in language being to give force to the enunciation of words through the grip afforded to the muscles of articulation, which increases the articulatory hold upon the vowel sounds. It is the wonderful blend of consonants with vowels, and especially diphthongs, which makes the English language such a perfect language for the efficient expression of "thought." There is a force and grandeur in the English language comparable with the accomplished English physique brought about by the eurhythmic movements of games of skill. A language with too many consonants is unmusical, and with too many vowels is weak. Particular mention must be made of the richness of the English diphthongs, which are so constantly recurring—in fact there appear to be very few, if any, real vowel sounds in English, "uh" and perhaps "aw" being the exceptions.

Thought in Diction.

Thought in diction, which means the harmony arising from the mental control of the movements that produce sound, includes the regulation of the output of the vibrating air by the perfect poise of (1) the physiological forces which effect the intake and output of the breath ; (2) the forces which make the breath vibrate ; and (3) the forces that give just the requisite amount of compression to the vibrating air and tension to the walls of the vocal apparatus.

There must be an artistic compression of the vibrating air, a slight tensing of the walls of the vocal apparatus throughout, and a definitely finished shaping of the articulatory apparatus for every musical sound. A distinctive shape must be given to each vowel sound, and the sensation of tone arising from the balance of forces must be always in evidence. The articulations must be definitely made and smartly broken, while the escaping air is controlled when the consonants are sounded ; for the consonant is the breaking not the making of the articulation, and its finish is due to the control of the escaping air when the break is made. If there is insufficient tension the sounds will be flabby and fluffy, and if the tension is too great, metallic and hard.

For the sake of simplicity the terms "shape" and "hold" may be applied to vowels, and "break" and "hold" to consonants. The hold can be felt as well as the shape or the break, and it is the combination of these feelings that gives that important asset to voice-users called the "sensation of tone."

Every important vowel shape possesses a goodly number of special harmonics which are lost unless that shape is correctly formed and the vibrating air is properly controlled in that shape. This probably explains why it is that singers who are sufficiently good artists to be engaged for great works are often, strictly speaking, out of tune with the orchestra, and also that the voices of well-known singers often do not blend in part-singing. The friction caused by the escaping air from uncontrolled explosive consonants is not only unmusical in itself but very damaging to the music of the vowels.

The phonetic symbols of the chief fundamental sounds are u: oo, o:

Phonetic Symbols. aw, a: ah, i: ee ; there is no special symbol for the Southern "oh" or for the "ay." "O" represents the Northern "oh," the "u" being added to it in order to represent the pronunciation of the Southerners, so that "oh" becomes "ou." "Ay" is represented by the symbol "ei," which deprives it of much of its music.

The combined sounds are represented as follows :

au, ou ; ai, I ; ɔi, oi ; ju, U.

The symbols for the subordinates are :

u, ɔö ; A, üh ; ɔ, ö ; æ, ă ; e, ē ; i, ī.

The remaining symbols are ə:, for the sound heard in the word "fur" with its subordinate ɔ in the word "above"; A represents the sound in "rug"; ε the sound in "there"; θ, "then"; j, "you"; ſ, "show"; ʒ, "measure"; ð, "thin."

The Scotch "oh" is represented by "o:" by some phoneticians.

The Neutral Vowel- Sound "Uh."

The neutral vowel-sound, "uh," that is, the sound made by the vibrating air passing unobstructed through the space that exists when the articulatory apparatus is in the most restful position (study Fig. 34 very carefully), is a very important sound in English—perhaps the most important, because it is always cropping up in the most unexpected places. It is a sound, too, that is very badly made by English people, possibly because of their inability to relax sufficiently, hence another sound becomes substituted for it.

The flabby "uh" sound made by the inexperienced speaker lacks the regulated tension that is necessary for vocal tone, and is suggestive of subdued fright rather than power.

The pure "uh" has a subordinate sound corresponding to it, which like other subordinates is *staccato*, tense, and crisp. The subordinate "uh" is usually made the subordinate of the "oh" sound, which is absurd, seeing that its shape is so different from that of "oh."

Compare the prolonged "uh" sound in the word "love" with the shortened "uh" sound in the word "hug." How often the final sound of Cæsar is pronounced "ah" instead of "uh!" Or again, how many make this sound when a vowel is followed by the consonant "r." Try the following words—moor, more, mare, mere, hour, mire, coir, ewer. The pronunciation of a final "r" sound in English causes much trouble from the non-recognition of the "uh" sound. A slight trill is permissible, but nothing approaching the Scotch trill, which is so distasteful when carried to extremes by singers in such a word as "ever," which should be pronounced "évhuh," with a mere suspicion of a trill, not "évhuh-r-r-r."

The first line of Wordsworth's "Westminster Bridge" begins with the pure vowel "uh," and the majesty of the scene fails to be expressed unless this sound is well pronounced:

"Earth has not anything to show more fair."

There is no objection for those who prefer it to call this sound "ur" (phonetic $\alpha :$).

The word expressive of the feeling that makes a reality of life—"love"—contains the full rich "uh" sound. It is by no means uncommon to hear failure of expression in diction due to the fact of the speaker having failed to understand the import of the sound. The all-pervading sentiment "love" is made by its diction to sink into insignificance, and the "earth" and the "world" are reduced to very small proportions.

Exercises for the "Uh" Love may come and love may go,
Sound (? Phonetic $\Lambda :$). But I will love no more, no more.

The sound "r" coming after a vowel altogether changes its
The Effect of the "R" English pronunciation. Not only is the "r" scarcely if at all
Sound upon the Vowels, sounded, for the "uh" sound takes its place almost entirely,
but what is more remarkable still the fundamental sound
itself is altered; it becomes a pure vowel through losing its change at the end of its
pronunciation. Thus :

Moor ...	instead of moowre	becomes	moouh or mooer
More ...	"	mohoore ..	mohuh .. moher
War ...	"	wawuhre ..	wawuh .. wawer.
Bar ...	"	bahuhere ..	bahuh .. baher.
Mare ...	"	mayeere ..	mayuh .. mayer.
Mere ...	"	meeyere ..	meeuh .. meeer.
Hour ...	"	houoore ..	houuh .. houer.
Hire ...	"	hieere ..	hiuh .. hier.
Coir ...	"	koieere ..	coiuh .. coier.
Cure ...	"	kyoowre ..	kyoouh .. kyooer.

The study of this effect of the "r" sound upon the preceding vowel will enable the student to realise perhaps for the first time that the six fundamental sounds are not strictly speaking pure vowel sounds.

If the final sounds are left out in the pronunciation of the six fundamentals much music is lost in singing and more especially in speaking. The word "home" loses much of its meaning unless the "oo" is brought out—it should be pronounced "hohoom." Nevertheless the "oh" sound must predominate, and the "oo" be duly subordinated. The same applies to the word "daisy"—the "ay" must predominate over the "ee"-like sound at the end of it. Listen for the "w"-like finish to the "oo" in the word "do," and the "y"-like finish to the "ee" in the word "see," the "uh"-like finish to the "ah" in the expression "bah," and to the same finish, only less marked, to the "aw" in the word "saw."

Exercises for the “Ohr” Sounds. (See Figs. 34, 35.)

One little boy more
 A napkin bore.
 Slower and slower
 He limp'd on before
 Till they came to the back of the belfry door.
 His tail waggled more
 Even than before.
 If anyone lied, or if anyone swore,
 Or slumber'd in prayer-time and happen'd to snore.

Exercises for the “Awr” Sounds. (See Figs. 34, 35.)

War—war—war—fire and famine and sword.
 War—war—war—musket and powder and ball.
 War—war—war—misery, murder, and crime.

Exercises for the “Ahr” Sounds. (See Figs. 34, 35.)

But one free step and one lofty heart
 Bore thro' that scene to the last their part.
 Give me my home on thy noble heart,
 Well have we loved—let us both depart.
 But thou said I had miss'd thy mark,
 Who sought'st to wreck my mortal ark
 By making all the horizon dark.
 What songs below the waning stars
 Sang, looking through the prison bars
 Just ere the falling axe did part
 The burning brain from the true heart.

Exercises for the “Ayr” Sounds. (See Figs. 34, 35.)

The Jackdaw sat on the Cardinal's chair,
 Bishop and Abbot and Friar were there,
 Here and there
 Like a dog in a fair
 With saucy air.
 But no longer it wagg'd with an impudent air,
 No longer he perch'd on the Cardinal's chair.

Exercises for the “Eer” Sounds. (See Figs. 34, 35.)

Ah, Fear! ah, frantic Fear,
 I see, I see thee near.

Exercises for the “Ahr,” “Ayr,” and “Ohr” Sounds.

In vain you strive with all your art
 By turns to fire and freeze my heart;
 When I behold a face so fair,
 So sweet a look, so soft an air,
 My ravish'd soul is charmed all o'er,
 I cannot love thee less or more.

**The Sounds
"Uh," "Er," and
"R."**

The “uh,” the “er,” and the “r” sounds appear at first sight to be very dissimilar, but really they are very similar. Shape correctly for “uh,” with the tongue lying at rest and its tip touching the back of the lower front teeth, the jaw dropped to its position of rest, with the lips at rest and slightly protruded, and the corners of the mouth drawn

slightly inwards. Repeat the “uh” sound six times without altering the shape of the mouth or moving the tip of the tongue. Repeat the “uh” sound and raise the tip of the tongue, tap it against the back of the gums of the front upper teeth, and then bring it down to the back of the lower front teeth; the correct semi-rolled sound of the English “r” as opposed to the rolled Scotch “r” appears in the middle of the “uh” sound, “uh-r-uh” (if the last “uh” is obliterated it may be spelt “er”). The above exercise is the only satisfactory way of treating the mispronounced “r” sound in English. Those who cannot sound the “r” invariably carry the corners of their mouths too much outwards, and place the tip of their tongue too far back on the palate. Another exercise is the practice of words beginning with the “r” sound, prefixing each “r” sound with “uh”—“uh-right uh-round uh-rugged uh-rocks uh-ragged uh-rascals uh-ran.” This exercise should be preceded by saying “uh-rye” six times in succession. (See Fig. 34.)

**The Phonetic
Symbols, $\text{\textcircled{e}}$:
 $\text{\textcircled{e}}$ and Λ .**

Phoneticians have three symbols— $\text{\textcircled{e}}$: for “er” in “earth,” $\text{\textcircled{e}}$ for a weaker “er” sound in the first syllable of “above,” and Λ for the “uh” sound in “much,” but apparently they do not trouble about the difference between “love” and “hug,” and yet there is quite as much difference between the vowel sounds in “love” and “hug” as there is

between the vowel sounds in “love” and “nerve.” As to whether the sound derived is “uh” or “ühr” it depends solely upon the movement of the tip of the tongue. If “uh,” the tip remains stationary at the back of the lower front teeth; if “ühr,” it is raised to the back of the gums of the upper front teeth and smartly brought down again. For musical purposes it seems advisable to rely upon the neutral vowel sound “ūh” (? phonetic Λ :) for most purposes, to claim a fundamental and subordinate “ūh” (phonetic Λ), and to keep the “er” sound (phonetic $\text{\textcircled{e}}$:) for exceptional cases such as “nerve.”

Phonetic $\text{\textcircled{e}}$:

When these words were heard
That poor little bird
Was so changed in a moment, 'twas really absurd.

Phonetic $\text{\textcircled{e}}$

O! the long and dreary winter,
O! the cold and cruel winter;
Ever thicker, thicker, thicker,
Froze the ice on lake and river;
Ever deeper, deeper, deeper,
Fell the snow o'er all the landscape.

Phonetic Λ

They turned up the rugs,
They examine the mugs.

Never was heard such a terrible curse.
Nobody seem'd one penny the worse.

The mute expression
Served in lieu of confession

And being thus coupled with full restitution
The Jackdaw got plenary absolution.

The Pronunciation of the English Language. The simplest arrangement of the English vowel-sounds and their phonetic symbols in accordance with the musical ear is as follows:

Fundamentals.	Subordinates.	Combined.
uh, lōve,	ʌ:	üh, hüg, A
ur, fur,	ə:	äbove, ə
oo, soon,	u:	öö, soot, 'u
oh, so,	ɔ:	—
aw, saw,	ɔ:	öd, sod, o
ah, psalm,	ɑ:	ă, sat, æ
ay, say,	e:	ĕ, set, e
ee, see,	i:	ĭ, sit, i

Combined (continued).

ou, vow, au	our, hour, auə:
I, vie, ai	ire, hire, aɪə:
oi, voice, ɔi	oir, coir, ɔɪə:
u, view, ju	ure, cure, juə:

Nasal Vowels.

"m," Sam; "n," sand; "ng," sang, n.

The "Oo" Shape The shape for the "oo" sound is obtained by holding the little finger between the well-protruded lips, the usual faults being that the lips are too little protruded and the teeth are not sufficiently separated. No teeth should be showing in the "oo," "oh," or "aw" sounds, which means that the teeth should be wider apart than the lips. A good idea of the amount of protrusion that is necessary can be obtained by studying the shape that has to be assumed when whistling. It is necessary carefully to differentiate between the musical tone of the pure "oo" sound, and the absence of music in its weak imitation by those who advocate the "kooing" method of voice-training. The "oo" vowel has its own special harmonics, and, if all of these are produced, like the other vowel sounds it is full of music, but can easily be deprived of this music by a faulty shape and faulty production. So many musicians are tired of hearing the somewhat dove-like feeble results of the "kooing" training that they have waged an unfair warfare against the pure "oo" sound. It is just as absurd to attempt to train a voice upon one sound only, as to expect to get good educational results from a part of a subject. All the sounds of a language must be learned if it is desired to speak or sing that language correctly. Attention should primarily be paid to the vowels which are fully musical, especially to the fundamental sounds "oo"—"oh"—"aw"—"ah"—"ay"—"ee" and "uh" from which the diphthongs and the subordinates are derived.

Exercises for the "Oo" Sound. (See Fig. 35.)

Two by two
The Cardinal drew
Marching that great refectory through.

And do you now put on your best attire,
And do you now pull out a holiday,
And do you now strew flowers in his way.

The shape for the "oh" sound is larger—about the size of the thumb—
The "Oh" Shape with the lips a little less protruded than for "oo." In the South of England "oo" is introduced into the end of the sound so that it becomes "oh-oo." It is a good exercise to repeat the following sounds: "oo—oh—ohoo," "oo—oh—ohoo," "oo—oh—ohoo," "oo—oh—ohoo,"

while watching the change in the shape of the mouth in a mirror. The "oh" sound is very common in English, and for speaking purposes is most important. It is astonishing how the richness of the speaking voice improves if care is taken over the pronunciation of this sound, and it is still more astonishing how very badly this sound is made by Londoners. Even by the better educated its sound is lessened by widening the mouth and drawing back the lips. The teeth should be well separated in front so that they are wider apart than the lips, and therefore are not seen.

Exercises for the "Oh" Sound. (See Fig. 35.)

And six little singing boys—dear little souls,
In nice clean faces, and nice white stoles,
Two nice little boys, rather more grown,
Carried lavender-water and eau-de-Cologne,
And a nice little boy had a nice cake of soap
Worthy of washing the hands of the Pope;

And in newly-made Saints and Popes, as you know,
It's the custom at Rome new names to bestow,
So they canonised him by the name of Jack Crow.

Gold—gold—gold—gold,
Bright and yellow, hard and cold;
Molt'n—grav'n—hammered—roll'd,
Heavy to get and light to hold;
Hoarded—barter'd—bought and sold,
Stol'n—borrowed—squandered—doled;
Spurned by the young, hugged by the old
To the very verge of the churchyard mould.

The "Aw" Shape due either to improper shaping or to the introduction of the "r" sound.

—**Phonetic ɔ:** It is a sound very rich in harmonics and is consequently full of music. Another common fault is to use it as a substitute for the "uh" sound in words ending in "ward," which are continually occurring in the commands of drill. In "forwards," "backwards," "upwards," and "downwards," owing to the mannerism of accentuating the last syllable (which is not English), the "uh" sound becomes "aw." "Arms upwards stretch" becomes "Ahms upwaawds stretch." The last word is emitted by a staccato jerk in a high key, with a pinched vocal apparatus. These kinds of commands are unmusical, irritating, and voice-breaking, yet successfully produce the arhythmic movements so much admired by drill enthusiasts.

Exercises for the "Aw" Sound. (See Fig. 35.)

The Monks and the Friars they searched till dawn,
When the Sacristan saw
On crumpled claw
Come limping a poor little lame jackdaw.

This poor little jackdaw
When the Monks he saw
Feebly gave vent to the ghost of a caw.

And the Priests with awe
When his tricks they saw
Said "The Devil must be in that little jackdaw."

When the first thing they saw
 Midst the sticks and the straw
 Was the ring in the nest of that little jackdaw.

That good jackdaw
 Would give a great caw.

And many remarked as his manners they saw
 That they never had seen such a pious jackdaw.

All to nothing swiftly tend,
 All waste, all vanish, all have end ;
 All sink, all wither, rose soon fadeth.

The “Ah” Shape—Phonetic

α :

The “ah” sound is one of the most difficult vowel sounds to pronounce properly. The teeth are very widely separated in front, about an inch, and the lips are protuded only a little. It is very difficult to control this sound. The lips being wider apart in front than the teeth, just the rims of the teeth are visible. Most people draw back the corners of the mouth too much, making the mouth too wide from side to side and not wide enough from top to bottom. This retraction of the corners of the mouth narrows the sound, and if the lips are not wider apart than the teeth, the “ah” sound loses its clear character. The “oo,” “oh,” and “aw” sounds are characterized by their richness, the “ah,” “ay,” and “ee” by their clearness. It should be noted that protrusion of the lips gives richness, and raising the lips so that the teeth are shown imparts clearness.

Another great fault in the pronunciation of “ah” is due to stiffening of the articulatory apparatus, especially of the lower jaw. Too low a position of the tongue in the floor of the mouth also causes undue tension. The top of the tongue should be level with the top of the lower teeth throughout its whole length, instead of being depressed at the back. The lower jaw, well dropped in front for the “ah” sound, being higher at the back than in front, is on a slanting plane. The surface of the tongue should be on the same plane.

Exercises for the “Ah” Sound. (See Fig. 35.)

I said, The years with change advance ;
 If I make dark my countenance,
 I shut my life from happier chance,
 And high shrine doors burst thro' with heated blasts.
 White surf wind-scatter'd over sails and masts,
 Ere I saw her clasped in her last chance,
 A light of ancient France.

A change o'er her mien and spirit passed,
 She ruled the heart that beat so fast.

With the falchion yet in his cold hand grasped
 And his country's flag to his bosom clasped.

In the breath of morn is balm,
 Balmy are the dews of even,
 In the stillness and the calm
 Balm for human woe is given.

The “Ay” and “Ee” Shapes—Phonetic e : i :

The “ay” and “ee” sounds are seldom musically pronounced : they are metallic and wanting in clearness, owing to the shape of the mouth being too wide from side to side and not wide enough from above downwards. The lips should be so much more separated in front than the teeth that half the depth of the front teeth is showing in “ay” and the whole depth in “ee.” The showing of the teeth gives brightness. There is a great

tendency to show the side teeth, especially in "ee," and to tighten the lips, giving the penetrating sound so noticeable in Italian singers, instead of the brilliant resonance which is so beautiful.

The Cockneyising of the "ay" so that it is difficult to distinguish from the Cockney "I" is only too well known. If, as is predicted by phoneticians, Cockney English becomes standard English, then good-bye to the music that belongs to the English language, and to all the beauty of sound with which English literature abounds; it is opposed in every way to eurhythmics and to musical taste.

Exercises for the "Ay" Sound. (See Fig. 35.)

Who can say
 Why to-day
 To-morrow will be yesterday?
 And he peered in the face
 Of his Lordship's Grace
 With a satisfied look, as if he would say,
 "We two are the greatest folks here to-day."
 Deposit it straight
 By the side of his plate,
 Our comfits and cates
 And dishes and plates;
 They turn up the dishes—they turn up the plates,
 They take up the poker and poke out the grates.
 No longer gay
 As on yesterday,
 His feathers all seemed to be turned the wrong way;
 And he turned his bald head, as much as to say
 "Pray be so good as to walk this way."
 When as words were too faint
 His merits to paint
 The Conclave determined to make him a Saint!

Exercises for the "Ee" Sound. (See Fig. 35.)

Never I ween
 Was a prouder seen,
 Read of in books, or dreamt of in dreams.

In the heart of a seed
 Buried deep—so deep,
 A dear little plant
 Lay fast asleep.

To die, to sleep; to sleep—perchance to dream.

Go where glory waits thee,
 But while fame elates thee,
 Oh! still remember me.
 Other arms may press thee,
 Dearer friends caress thee,
 All the joys that bless thee
 Sweeter far may be.

Then should music stealing
 All the soul of feeling,
 To thy heart appealing,
 Draw one tear from thee,
 Then let memory bring thee
 Strains I used to sing thee,
 Oh! then remember me.

Nasal Resonance.

In the speaking of English there is a marked absence of nasal resonance, and consequently English people suffer much more from nasal catarrh than they should do, from the neglect of the proper use of the nasal chamber in making the nasal vowels, "m," "n," and "ng."

Nasal resonance gives a final polish to sounds, and the control of the vibrating air in the nose is a most important part of voice-training. Singing or speaking through the nose—nasal twang—is highly objectionable, and is quite different from nasal resonance. In nasal twang the pharynx and soft palate are rigid, and the air is allowed to escape freely. There should be a sensation of the hold in the nose for the nasal vowels, just as there is in the mouth for the mouth vowels. Children suffering from adenoids (from soft swellings either partially or completely filling up the part of the throat at the back of the nose) are said to possess a nasal quality in speech, but their voices are deprived of any nasal quality at all; therefore the term "nasal voice" becomes a misnomer.

Many writers are particularly anxious to eradicate from the speaking of English all kinds of peculiarities in what are called accent and provincialisms, but if these peculiarities are musical why worry about them? Surely it would be just as great a mistake to interfere with the musical sounds of the Irish, some of the Welsh, and even some of the Scotch dialects, as to advocate the adoption of the unmusical Cockney or Glasgow twangs. Some of the Welsh and Irish inflections—the latter especially—are delightful. What should rather be attempted in the training of the voice, is the removal of defective movements of the vocal apparatus, which interfere with music in speech or song. The most objectionable quality of the real Cockney voice is due to improper use of the nasal-pharynx and soft palate.

The nasal vowel sounds, "m," "n," and "ng," should be carefully developed by daily exercises. They add tone to the mucous lining of "M," "N," and "Ng" Sounds. the nasal cavity and throat, and beautify the voice by the gain of nasal resonance. The nasal cavity with its delicate heating and filtering apparatus and its large, intricate and cleverly devised accessory cavities, is the vocal resonance chamber *par excellence*. It is a hollow cavity in the midst of hollow cavities. Above it is the skull—the brain box; below it the mouth, and on each side the orbits. The bones of the nose itself are thin, but the bones forming the walls of the large additional spaces called the accessory spaces are very thin indeed—hollow spaces with thin walls are magnificent resonators, and the thinner the walls the better. The possessors of phenomenal voices probably possess large nasal accessory cavities with very thin walls as well as a perfectly symmetrical vocal apparatus. The French school of voice-training is inclined to sacrifice everything to nasal resonance; but while it is scarcely possible to have too much nasal resonance, there are other factors of equal importance to be considered as well, such as the control of the breath. (See Fig. 33.)

The difference in character between "m," "n," and "ng" is the amount of mouth resonance that is added; "ng" is purely nasal, as the air is stopped entering the mouth at the back, and any mouth resonance can only be secondarily obtained through vibration of the palate, which separates the nose from the mouth.

Exercises for the "M" Sound.

Mere money may make many mate,
My Madeline, my Madeline;
My mouth, my mind, my memory
Must mingle murmur Madeline.

Many million mouths munch "M," "M."

Exercise for the "N" Sound.

No sun—no moon—
No morn—no noon—
No travelling at all—no locomotion—
No inkling of the way—no notion—
"No go"—by land or ocean—"November" (*Hood*).

Exercises for the “ Ng ” Sound.

He cursed him in eating, he cursed him in drinking,
He cursed him in coughing, in sneezing, in winking :
He cursed him in sitting, in standing, in lying,
He cursed him in walking, in riding, in flying.

Ring, sing, ring, sing ! pleasant Sabbath bells ;
Chime, rhyme, chime, rhyme ! through the dales and dells ;
Rhyme, ring, chime, sing ! pleasant Sabbath bells ;
Chime, sing, rhyme, ring ! over fields and fells.

The Subordinate Vowel Sounds. The subordinate vowel sounds—owing to the *staccato*, crisp, and tense character of their pronunciation, and their shortness of duration as compared with their corresponding fundamentals—do not possess the same amount of potential music as the fundamentals. It is very necessary strictly to observe these marked characteristics in the pronunciation of the subordinates, and to make them as clean-cut as coins fresh from the mint. The chief faults committed are : (1) inefficient differentiation of their shapes, which, although slightly more close set, are in the main the same as for their corresponding fundamentals · (2) insufficient agility of the necessary articulatory movements. (See Fig. 35.)

Exercise for the Subordinate ö Sound—Phonetic u.

The Cardinal rose with a dignified look,
He called for his candle, his bell, and his book ;

Then the great Lord Cardinal call'd for his book,
And off that terrible curse he took.

Exercise for the Subordinate ö Sound—Phonetic ɔ.

The day was gone,
The night came on.

Exercise for the Subordinate ä Sound—Phonetic æ.

Where in state the great Lord Cardinal sat
In the great Lord Cardinal's great red hat,

Which a nice little boy stood ready to catch,
In a fine golden hand-basin made to match.

His pinions drooped—he could hardly stand—
His head was as bald as the palm of your hand.

He grew sleek and fat,
In addition to that
A fresh crop of feathers came thick as a mat !

Exercise for the Subordinate ē Sound—Phonetic e.

Love that hath us in the net,
Can he pass and we forget ;
Many suns arise and set,
Many a chance the years beget,
Love the gift is Love the debt.
Even so.

Love is hurt with joy and fret,
 Love is made in vain regret,
 Eyes with idle tears are wet,
 Idle habits link us yet ;
 What is Love ? for we forget.

Ah ! no, no.

“The Miller’s Daughter” (*Tennyson*).

He cursed him at board, he cursed him in bed,
 From the sole of his foot to the crown of his head.

Exercise for the Subordinate i Sound—Phonetic i.

Till, when nobody’s dreaming of any such thing,
 That little jackdaw hops off with the ring !

But no, no such thing,
 They can’t find the ring !
 And the Abbot declared that “When nobody twigged it
 Some rascal or other had popped in and prigged it.”

His eyes so dim,
 So wasted each limb,
 That, heedless of grammar, they all cried, “That’s him !
 That’s the scamp that has done this scandalous thing ;
 That’s the thief that has got my Lord Cardinal’s ring.”

The Diphthongs or Combined sounds.

The four diphthongs, *ou*, *I*, *oi*, and *U*, which occur so frequently in the English language, and so markedly enrich its musical value in speech and song, are not, as is so generally supposed, made up of two distinct vowel sounds, as is clearly the case in the southern pronunciation of the vowel *oh* (ohoo), and is the case, though not so clearly, in the pronunciation of all the fundamental vowel sounds with the exception of *aw* and *uh*. The diphthongs like the vowels possess their own distinctive individual shapes, which however alter as they are being pronounced. The sounds of the diphthongs change as a glide is made from a definite shape at the beginning to an equally definite shape at the end, shapes that must be as carefully moulded as the shapes for the vowels themselves. As the diphthong shapes are different from the vowel shapes, the sound of a diphthong cannot be represented by the sound of two vowels; their sound is peculiarly their own, and must be recognised as such. It would simplify phonetics very much if distinctive signs were allotted to the diphthongs instead of giving them the sign of two vowel sounds, and then proceeding to argue that the sounds are different from these signs.

The diphthong shape at the beginning is a vowel shape modified by the lip position of another vowel. At the end it is the lip position of that vowel modified by the shape of its colleague. The modification definitely alters the sound of such vowel both at the beginning and at the end. As soon as the sound of the diphthong is commenced it begins to change as the shape slides from that at the beginning towards that at the end. During this sliding change an innumerable number of different sounds are made, producing, one would suppose, such a large number of harmonics that it is reasonable to think that a diphthong possesses a higher musical value than a fundamental vowel. The neglect of the proper pronunciation of the musical English diphthongs is so remarkable, that it can be stated without fear of contradiction that no educated English person can pronounce them properly unless he has been carefully trained to do so by someone possessing the gift of an ear sufficiently musical to detect their

real value. The Irish sometimes give the full musical value to the diphthong sound *ou*, the Welsh are inclined to clip it somewhat. The *I* sound is always deficient in clearness. The *oi* sound is occasionally well pronounced by singers. The *U* sound is nearly always scamped by both speakers and singers. Let one ask his friends to say the sentence, "Now *I* love you, boy," and note their pronunciation of the sounds *italicised*.

By making a careful analysis of the difference in the shape that is necessary for the production of a given sound, it is quite possible to state what that shape should be, and, having decided what that shape is, to describe the sound that will issue from that definite shape—as has been done in the treatment of the vowel sounds.

It will simplify the comprehension of the diphthongs if, as in the case of the vowels, the distinctive shape or shapes of each is forthwith described.

The *ou* Shape—*Phonetic au*. The diphthong sound *ou* (as in the word "vow") certainly has a resemblance to the two vowel sounds *ah* and *oo*. Hence it possesses the phonetic sign "au," much to the disgust of many phoneticians who rightly declare that it is neither *a* nor *u*. The same may be said about *I*, *oi*, and *U*.

The shape for *ou* is the shape of the mouth as for *ah*, with the lips rounded and protruded as for *oo*. The *ah* sound at the beginning is so much modified by the *oo* lip position, that the sound is quite different from *ah*. At the end of the sound the lips are still in the *oo* position, but the mouth is influenced by the *ah* shape; it does not close sufficiently for the production of a pure *oo* sound. In other words, the end of the sound is the *oo* lip position modified by the *ah* shape. While the sound is being made a continuous glide is taking place from the *ah* shape towards the *oo* shape while the lips are rounded and protruded. It requires much attention to learn to keep the teeth sufficiently separated, and the lips sufficiently protruded, while pronouncing the diphthong *ou* throughout the glide; it is quite likely that a period of "mouthing" has to be gone through, before the requisite articulate movements can be performed artistically. "Mouthing" is a clumsy and laboured movement of the articulatory apparatus. Artistic movement results, when the articulatory apparatus is sufficiently flexible, and the muscles which perform the movement are sufficiently co-ordinate in action.

The *ou* sound may be depicted as AHoo gliding into OOah; *Ah* modified by *oo* at the beginning and *oo* modified by *ah* at the end of the glide. The proper shapes at the beginning, at the end, and during the glide must be definitely preserved, otherwise the sound will suffer from loss of musical value.

The effect of the *oo* modification upon the *ah* is to make it more like *uh*, and the *ah* modification of the *oo* makes it more like *üh*. This can be expressed in phonetic signs, $\Lambda:$ $u:$ Λ . The word "now" should be pronounced more like $n \Lambda: u: \Lambda$ than $n a: u: (n\ddot{u}hoo\ddot{u}h)$, not *nahoo*.

The *I* sound, as in the word "vie," may be depicted as AHee gliding into EEah.

The *oi* sound, as in the word "voice," may be depicted as AWee gliding into EEaw.

The *U* sound, as in the word "view," may be depicted as EEoo gliding into OOee.

A slight change in the phonetic signs is suggested by this description of the diphthongal shapes:

ou, Vow, AHoo—OOah (not ahoo), $\alpha\mu$ (instead of *au*).

I, Vie, AHee—EEah (not ahee), $\alpha\dot{\imath}$ (instead of *ai*).

oi, Voice, AWee—EEaw (not awee), $\varnothing\dot{i}$ (instead of *oi*).

U, View, EEoo—OOee (not eeoo), $\jmath\mu$ (instead of *ju*).

Joining the vowel sounds together makes one sign only, and illustrates the fact that one vowel is influenced by the other.

Exercises for the *ou* Sound. (Suggested Sign, *aw*.)

In and out
 Through the motley rout
 The little jackdaw kept hopping about.
 He hopped now about
 With a gait devout,
 At matins, at vespers, he never was out.
 There's a cry and a shout
 And a deuce of a rout,
 And nobody seems to know what they're about.
 How poor, how rich, how abject, how august,
 How complicate, how wonderful is man.

The *I* sound is made by gliding from the Ahee shape to the EEah shape. For the Ahee shape the mouth is opened as for the *Ah* sound, but the lips being in the *EE* position are raised to the top of the teeth. For EEah the lips are kept in the *EE* position, but the teeth are kept wider apart. *I* is *Ah* modified by *EE* at the beginning of the glide, and gradually changes into *EE* modified by *Ah* at the end of the glide.

The mouth should be opened wider for *I* than for any other sound, but it is very seldom that the lips are raised to the top of the teeth, and consequently the sound suffers from want of clearness.

Cockneys have great difficulty in differentiating between their *I* and *Ay* sounds. People told to go to the *I* section will most likely go to the *Ay* section, hence the student's answer to the examiner's question of the French for "to die" was *aujourd'hui*.

A beautiful, clear, and unmistakable *I* sound is made by raising the lips to the top of the teeth, which are separated by about an inch, and closing them to rather less than half an inch—without lowering the lips on the teeth—while the sound is being made.

The modification of *ah* by *ee* makes a sound similar to *uh*. *I* should be pronounced more like $\Lambda : i : \Lambda$ than $\alpha : i$ or $e : i$ ($\bar{u}h\bar{e}e\bar{u}h$ not ahee or ayee).

Exercises for the *I* Sound. (Suggested Sign, *ai*.)

I'm always in black, and I'm always in white,
 I'm grave and I'm gay, I am heavy and light,
 In form too I differ, I'm thick and I'm thin,
 I've no flesh and no bone, yet I'm covered with skin.
 I often die soon, though I sometimes live ages,
 And no monarch alive has so many pages.
 Thine eyes so bright
 Bereft my sight
 When first I viewed thy face,
 So now my light
 Is turned to night,
 I stray from place to place.
 Then guide me of thy kindness.
 So shall I bless my blindness.

The *oi* shape is probably the most difficult shape of all to make. It is a glide from AWee to EEaw. The mouth is shaped for *Aw* with the lips in the *EE* position (that is, the lips are raised for *EE* and slightly protruded for *Aw*), and the lips must be kept in this position throughout the glide to EEaw in which the teeth are wider apart than in the *EE* shape. The beautiful *oi* sound is *Aw* modified by *EE* at the beginning and *EE* modified by *Aw* at the end. It would be better expressed phonetically by the sign *æi* than by *oi*. *Aw* modified by *ee* should be pronounced $\circ : e$ ($\bar{a}w\bar{e}e\bar{u}h$).

Exercises for the *oi* Sound. (Suggested Sign, *ɔi*).

And then she smiled in shy sweet joy
Since but a lovely dimpled boy.

Then finding him so shy and coy
She sought the more to win the boy.

**The *U* Shape—
Phonetic *ju*.**

The *U* shape must be carefully differentiated from the *oo* shape in its glide from *EEoo* to *OOee*. At the beginning of the glide the lips are well protruded while raised to the top of the teeth as for the *EE* sound, and are kept up in the centre while approximating towards the *oo* shape at the end. The tongue is raised in front. This particular sound brings out the finish of the glide more than the other three diphthongs. It is better described phonetically by the sign *ju* than by *ju*, especially as the *ee* modification of the *oo* makes it more like *y*.

Exercises for the *U* Sound. (Suggested Sign, *ju*.)

A nice little boy held a golden ewer
Emboss'd and fill'd with water as pure
As any that flows between Rlieims and Namur.

I've more points than the compass, more steps than the flute,
I sing without voice, without speaking confute.

Old year we'll dearly rue for you,
What is it we can do for you,
We did so laugh and cry for you,
I've half a mind to die with you.

And do you now put on your best attire,
And do you now cull out a holiday,
And do you now strew flowers in his way.

Note.—In the last two exercises carefully discriminate between the *oo* and the *U* sounds.

The Vowels and Diphthongs. By the study of the vowels and diphthongs it has been found that the vowels consist of two sounds with the possible exception of *aw* and *uh*, and that the diphthongs consist of three sounds at least.

Phoneticians introduce yet another vowel sound by using the sign *ɛ* to represent the sound contained in the word "there," exactly the same sound as "ayr" in the word "mare." If this is necessary, why not introduce special signs for the other vowels when they precede *r*?

<i>oo</i>	is the diphthong <i>u : ə</i> .
<i>oh</i>	„ „ <i>o : u :</i>
<i>ah</i>	„ „ <i>a : A.</i>
<i>ay</i>	„ „ <i>e : ə.</i>
<i>ee</i>	„ „ <i>i : ə.</i>

The last part of the diphthong sound is entirely lost when it precedes the *r* sound, or perhaps it becomes merged into the sound *ə :* which represents the *r*.

"More" is pronounced *m o : ə :*, not *m o : u : ə :* (*mohuh*, not *mohoouh*). *Oh* is the pure Northern *oh*, not the Southern diphthong *o : u :*

The three sounds of the diphthongs may be represented phonetically as follows:

<i>ou</i> , Vow,	<i>ʌ : u : ʌ</i>	suggested sign <i>auu</i> .
<i>I</i> , Vie,	<i>ʌ : i : ʌ</i>	„ „ <i>aii</i> .
<i>oi</i> , Voice,	<i>ɔi : ə</i>	„ „ <i>ɔi</i> .
<i>U</i> , View,	<i>j u : ə</i>	„ „ <i>ju</i> .

The sounds italicized in the sentence :

Now I love you boy

should be pronounced :

Λ : u : Λ Λ : i : Λ Λ : j u : e oɪ : e.
ūhooōuh ūheēuh ūh yōoēēuh aōweēūh

The semi-vowels, w, y, l, and r, occupy an intermediate position

The Semi-vowels. between the vowels and the consonants. The vowels consist of the fundamentals, oo, oh, aw, uh, er, ah, ay, ee, and their subordinates ; the nasal vowels, m, n, and ng, and the combined sounds, ou, I, oi, and U. The consonants consist of the voiced sounds, v, b, th, d, g, and their corresponding unvoiced sounds, f, p, t, k, which are complete articulations, and of the voiced, z, zh, and j (dzh), and the unvoiced s, sh, and ch (tsh), which are partial articulations. A vowel is the result of the controlled breath passing unobstructed through a definite shape ; a consonant is the result of controlled breath passing through a complete or partial obstruction, that has been made and suddenly broken—the sound is made by the break, not by the make. The control of the breath is effected by co-ordinate movements of the chest, the abdomen, and the articulatory apparatus. W and y answer better to the definition of vowels, l and r to that of consonants—l and r are usually styled liquids.

The Semi-vowel "W." The semi-vowel "w" is a very interesting and useful sound. It is really a modification of the "oo" sound, made with the lips well protruded, and with the opening even smaller than for the subordinate öö ; this being so, a tremendous grip can be made with the w, of such enormous value in speech and song that the w may be regarded as one of the most useful and potent sounds in the English language. Many speakers or singers realise this. Do not experts devote their best attention to the "wh" sound, calling loudly for the marked aspiration of the "h," entirely ignoring the fact that the aspiration robs the "w" of most of its musical value ? By all means make a difference between the pronunciation of a "w" and a "wh." Give the full value to the music and the grip of the "w" and a slight aspiration to the "h" in "wh." The "h" being merely a whiff of breath is a most unmusical sound, and should on no account be over-emphasised. Many teachers also make mighty efforts to get this sound overdone, so much so that "wh" becomes converted into "floo" instead of "hoo" ; better omit it altogether, and make it "w" instead of "wh" than go to the other extreme of "floo." The saying, "What is the worth of woman? Double you, oh man," if spoken musically proves the utility of the "w" sound. No wonder the phoneticians turn the "w" upside down "m" for the sign of "wh" !

Exercises for the "W" Sound. (See Fig. 35.)

Weary and wounded and worn,
Wounded and ready to die.

War, war, war—misery, murder, and crime.

Wood sawed wood.
Wood would saw wood.
Oh, the wood Wood would saw.

Wherefore rejoice?
What conquests brings he home?
What tributaries follow him to Rome?

The Semi-vowel "Y." The semi-vowel "y" bears the same relationship to "ee" that "w" does to "oo." It is closer set than the subordinate "ë," and therefore possesses good gripping power—as felt in the words, ye, yea, and you.

Exercises for the "Y" Sound. (See Fig. 35.)

We know Eno, he knows you,
You know, I know Eno.

And do you now.

Old year, we'll dearly rue for you.
What is it we can do for you,
We did so laugh and cry for you,
I've half a mind to die with you.

The Semi-Vowel "L." The semi-vowel "l" is a very elegant sound, but is often inelegantly used; the word "little" is too often pronounced "litto," and much music is thereby lost. The tip of the tongue should be lightly placed as far forward as possible upon the hard palate, nearly touching the back of the upper teeth, the sides of the tongue being left free to vibrate so as to produce the trill or ripple that distinguishes this particular sound. It can be overdone, especially by the Welsh, who have a second sound peculiarly their own; it is usually very much underdone by the English, and the language consequently marred.

Exercises for "L" Sound.

Long and loudly little Lily laughed.

Truly rural.

Come limping a poor little lame Jackdaw.

The Semi-Vowel "R." The semi-vowel "r" is a trilled musical sound heard at the beginning but not at the end of words; it causes much difficulty in pronunciation to many speakers, a difficulty that is really very easily overcome, if due attention be paid to the proper shaping of the mouth, as has already been mentioned in connection with the sound "uh." Besides the exercise already recommended it is good practice: (1) To repeat words beginning with "wr," shaping definitely for the "w," keeping the tip of the tongue well forward; (2) To repeat words such as broom, pretty, dream, trot, thrill, straw, shrug. In both exercises make a conscious movement of the tip of the tongue up to the front of the hard palate, and keep the corners of the mouth well in. Avoid the exaggerated Scotch trill.

Exercises for the "R" Sound. (See Fig. 34.)

Write we know is written right
When we see it written write,
But when we see it written wright
We know 'tis not then written right,
For write to have it written right
Must not be written right nor wright,
Nor yet should it be written rite,
But write—for so 'tis written right.

Consonants. Consonants are the result of breaking a complete or partial articulation with or without a prefix of voice. The sudden break of the "M" articulation produces the consonant P, the "N" articulation T, the "NG" articulation K. P T K with vocal prefix become B D G.

The "M" Articulation.

Carefully make the "M" articulation by placing the articulatory apparatus in a position of rest, with the mouth closed, the lips together, the teeth not quite touching, and the tip of the tongue lightly touching the back of the lower front teeth. Make a prolonged sound while the articulation is preserved intact—the nasal sound "M" is heard. Suddenly break the articulation by smartly separating the lips—the unvoiced labial P consonant is heard. Prefix the sudden break with voice—the voiced labial B consonant is heard.

The "N" Articulation.

Carefully make the "N" articulation by shaping the mouth for the vowel "uh," and then making a complete barrier across the mouth by raising the tip of the tongue to the back of the upper front teeth, and the sides of the tongue to the sides of the side teeth. Make a prolonged sound while the articulation is preserved intact—the nasal vowel sound N is heard. Suddenly break the articulation by smartly lowering the tongue—the unvoiced dental T consonant is heard. Prefix the sudden break with voice—the voiced dental D consonant is heard.

The "Ng" Articulation.

Carefully make the "NG" articulation by shaping the mouth for the vowel "Ah," and then making a complete barrier at the back of the mouth by raising the root of the tongue and lowering the soft palate until they are in contact, keeping the tip of the tongue lightly touching the back of the lower front teeth. Make a prolonged sound while the articulation is preserved intact—the nasal vowel sound "NG" is heard. Suddenly break the articulation by smartly lowering the root of the tongue—the unvoiced palatal K consonant is heard. Prefix the sudden break with voice—the voiced palatal G consonant is heard.

F and V articulation.—Middle of the lower lip lightly touching the edges of the upper front teeth.

Th articulation Phonetic θ —Tip of tongue lightly placed between the teeth.

S and Z articulation.—Tip of tongue lightly touching hard palate just behind upper front teeth, sides of tongue lightly touching sides of teeth of upper jaw—a shallow channel along middle of tongue allows breath to escape, thus making an incomplete or partial articulation.

Sh and Zh articulation, Phonetic ſ z.—Similar to s and z, but tip of tongue a little further back and sides of tongue touching gums.

Ch and J articulation, Phonetic tʃ dʒ.—A combined articulation of t and sh and of d and zh.

Exercises for the Consonants.

Make a word of a consonant before and behind each of the fundamental and subordinate vowels and diphthongs, thus :

b oo b, b oh b, b aw b, b ab b, b ay b, b ee b.

bib, bĕb, băb, böb, bûb, bööh.

b ou b, b oi b, b I b, b U b.

Substitute other consonant sounds for "b," both at the beginning and at the end, such as p oo p, d oo d, t oo t, &c., &c.

Make the consonant sounds crisp and clear, and get rid of them as soon as possible by making a decided and sharp break of the articulation controlling the air after the break, and so avoiding reduplication or extra sounds. Extra sounds are just as misleading as omitted ones, and are usually unmusical. More exercises for consonants are included in the exercises of the articulatory apparatus.

CHAPTER VIII.*

BREATHING FOR VOICE.

The study of VOICE PRODUCTION in general presents three main problems:—

- 1.—BREATHING. The motor power and its control—the force that creates the vibration.
- 2.—THE ACTION OF THE LARVNX. The fixing of the rate of vibration. The creation of the sound.
- 3.—RESONANCE. The treatment and reinforcement of the sound created. The influence of mouth, pharynx, soft palate, tongue, nasal cavities, lips, &c.

The first problem, BREATHING, is physiological. The possibilities can be made fairly clear, and most of the muscular action involved can be consciously controlled. The only questions that arise are concerned with the relative advisabilities of the use of this or that possibility.

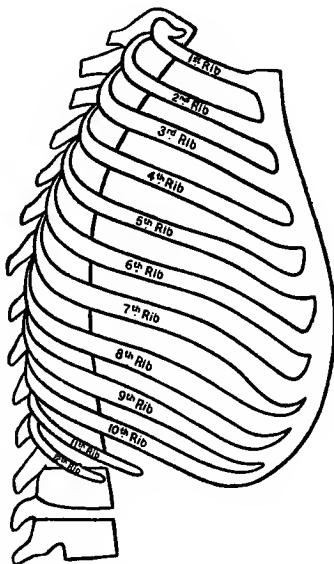


FIG. 16.—THE THORAX.

Ten pairs of Ribs pass from the Dorsal Vertebrae at the back to the Sternum in front. Between the front of the Ribs and the Sternum is a short length of cartilage called the Costal Cartilages, which add to the elasticity of the Chest walls. The eleventh and twelfth pairs of Ribs are called floating ribs because they do not reach the Sternum in front. The Intercostal (between-rib) muscles fill up the spaces between the Ribs (*see Fig. 22*). The Diaphragm, forming the floor of the Chest, is attached to the inside of the lower rim of the Thorax and to the front of the Lumbar Vertebrae (*see Fig. 21*).

The second problem, LARYNGEAL ACTION, is also physiological, but is obscure and provokes endless controversy. This obscurity arises partly from the difficulty of observing the action of the living larynx whilst it is dealing with an invisible medium, the air; and partly because we are unable to gain consciousness of the action involved.

* Chapter VIII. is Novello's Primer, "Breathing for Voice Production," re-written and brought up to date.

The third problem, RESONANCE, is again physiological, but is also psychological. The æsthetic faculties powerfully influence the result. Conscious control can be attained of the muscles that move the articulatory apparatus.

Whatever may be said regarding the second and third problems as separate studies it is generally admitted that unless the first problem is solved the solution of the others is impeded.

The object of the present work is to urge that a certain method of breathing, to be described, is the proper method for singers and speakers as well as for general hygiene; and to plead for attention to THE HEALTHY ACTION OF THE WHOLE BODY as a rational first principle in physical education.

Short preliminary definitions of the terms used to describe the bodily structure and muscles concerned with breathing will now be given.

The THORAX in the skeleton is a bony framework, with the STERNUM or breastbone in front and the SPINE behind, the two being connected

The Thorax. by the RIBS, twelve on each side. The ribs are made in the shape of a bow, the lower ribs are longer, and have a larger bow than the upper, so that when they are raised they increase the size of the thorax from side to side, and from before backwards by pushing forward the sternum.

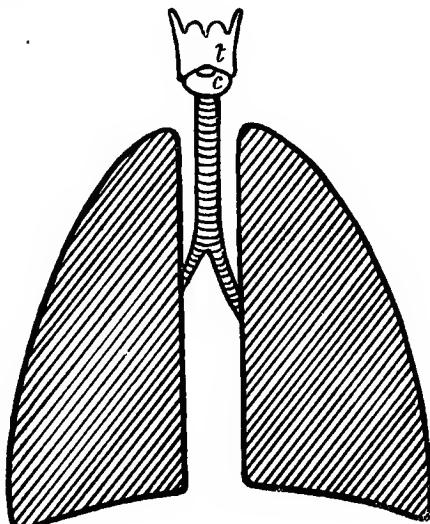


FIG. 17.—THE LUNGS.

A diagrammatic sketch showing the Trachea (wind-pipe) sending off a branch to the Right Lung and a longer branch to the Left Lung at a lower level. *t* represents the Thyroid Cartilage, *c* the Cricoid Cartilage of the Larynx (see Fig. 36).

The Lungs. The LUNGS are two masses of elastic sponge-like tissue. They contain numerous hollow air-tubes and air-cells, which, when filled, cause the organ to expand. The lungs fill the whole of the thorax except the part occupied by the Heart.

The Intercostal Muscles and the Diaphragm. The muscles directly engaged in breathing are (i.) the muscles attached to the ribs, connecting the rib above with the one next below, and called the INTERCOSTAL MUSCLES; and (ii.) the DIAPHRAGM, which forms an air-tight muscular partition between the chest and the abdomen (see Figs. 21 and 22).

If we would thoroughly understand the science of breathing, we must investigate the actions of these particular muscles, and learn how they act under all circumstances.

Respiration. Respiration, or breathing, consists of two distinct parts, called respectively, inspiration and expiration. By inspiration air is made to enter the expanded chest and lungs, and by expiration it is ejected as the chest and lungs become contracted. The more efficient the inspiration, the greater the potential motor power. This power can be concentrated or wasted by the method used in its ejection during expiration.

Therefore we have to find out how to efficiently expand the lungs during inspiration, and how to economise the breath during expiration.

Pressure of Air. Air exerts a pressure of 15 lbs. to the square inch. When the cavity of the thorax is expanded by muscular action this pressure inside the lungs forces them to fill up or follow the chest wall. There are two means by which this expansion may be effected: 1st, by the raising of the ribs by the contraction of the intercostal muscles, and 2nd, by the alteration in the shape of the **floor of the thorax** by the contraction of the diaphragm.

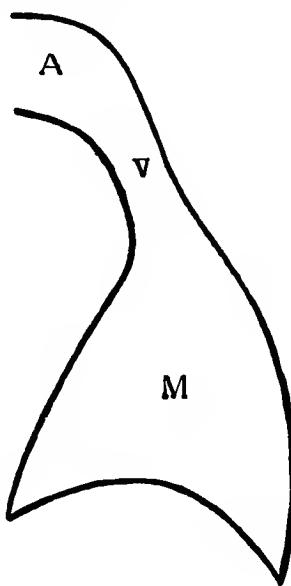


FIG. 18.—DIAGRAMMATIC OUTLINE OF VOCAL APPARATUS.

- A.—Articulatory Part. Mouth, Nose, and Pharynx.
- V.—Vibratory Part. Larynx, Pharynx, and Trachea.
- M.—Motor Part. Breathing Apparatus. Chest and Lungs.

Diagrammatic Sketch of Vocal Apparatus. Before any fundamental principles can be successfully laid down for the training of the voice, a good general idea of the machinery must be acquired. The vocal apparatus may be said to consist of that part of the body into which air enters during inspiration. It is in shape like a curved tube with its two ends expanded. The upper expansion (A), somewhat funnel-shaped, consists of the space occupied by the mouth and nose with its accessory cavities; the lower expansion (M), somewhat bell-shaped, consists of the thorax containing the lungs; and the middle tube part (V) connecting the two ends consists of the pharynx (throat), larynx (voice-box), and trachea (wind-pipe). The air made to vibrate in the whole of this hollow apparatus constitutes voice. The control of this vibrating air is the management of voice. Every movement of the body is effected by muscles, and the production of voice is brought about by the muscles of the vocal apparatus which move its different parts. These muscles alter the shape of the various cavities, and have the power to make the air contained therein to vibrate.

The production of voice is a highly complicated process; many muscles are concerned in the complex action, and the manner of their movement is of a most delicate and refined character, so much so that voice may be regarded as the highest accomplishment of which the body is capable. The action is so complicated that it is unreasonable to expect good results from attacking the movement as a whole. An analysis of the movement must be made, and the parts must be developed separately, as is done in the teaching of any other accomplishment.

The main divisions of the vocal apparatus consist of :—

- (1.) The Motor Apparatus (*m*): The muscles of the chest-walls, the lungs, &c.
- (2.) The Articulatory Apparatus (*A*): The muscles of the jaw, the lips, the tongue, the soft palate, the cheeks, the throat, &c.
- (3.) The Vibratory Apparatus (*v*): The muscles of the larynx, &c.

These muscles act in groups; each of the groups must work in harmony with the others, and every unit in each group must do its own allotted share of work, and no more, so that a perfectly co-ordinated rhythmic action may result.

The initial power in voice is obtained by breathing, so that it is advisable to begin with a consideration of the breathing apparatus.

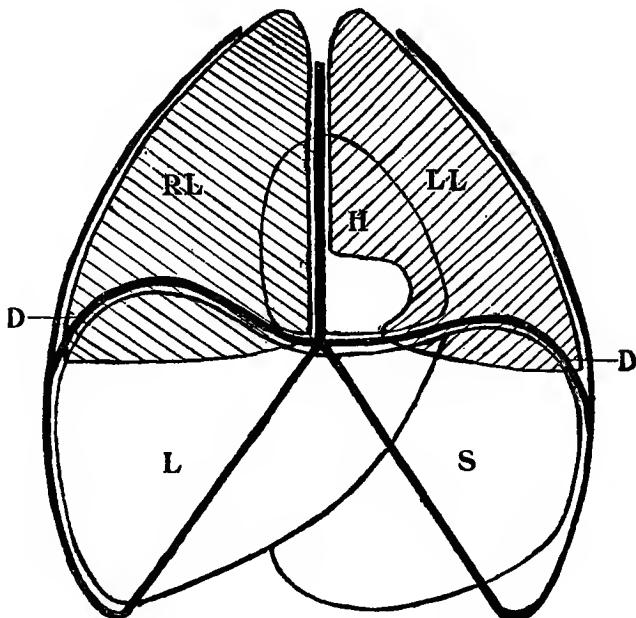


FIG. 19.—THE THREE LINES FORMING IMPORTANT LANDMARKS OF THE CHEST.

The divergent lines at the bottom of the front of the Chest meet one another and meet the bottom of the front line of the Chest; the curved Diaphragmatic Line D also enters into the same junction (called the pit of the Stomach). The pit of the Stomach, easily found on the body, gives a good idea of the level of (1) the base of the Chest, (2) the roof of the Abdomen, (3) the Diaphragm, (4) the top of the Liver (L), (5) the top of the Stomach (s), (6) the bottom of the Heart (H), (7) the bottom of the Lungs (R.L. Right Lung, and L.L. Left Lung).

The organ of respiration is the lungs; in the practice of breathing the lungs are almost passive, the active mechanism being the movement of the chest-walls by means of the chest muscles. The whole of the lungs must be equally engaged whenever breathing-in takes place, otherwise the health of the lungs will be affected, the part that is over-used will become strained in time, while the part that is under-used will gradually degenerate.

In breathing for voice it is even more necessary to pay due regard to the use of the whole of the lungs because, more air being used, greater damage is likely to be done to the lungs by improper use. The commonest cause of voice failure in voice-users is due to faulty breathing methods.

The easiest way to learn the anatomy that is necessary to understand

The Three Lines. the main principles of scientific vocal culture, is to map out on the body the position of the parts concerned in voice.

This can be accomplished by becoming familiar with the three lines depicted in Fig. 19 ; *the reader is requested to find these lines on his own body.*

The divergent lines can be felt, forming a ridge on each side of the lower part of the chest-wall in front. These two ridges meet at the top and join the vertical line. This junction, formed by the meeting of the three lines, is a most important landmark. The divergent ridges are about eight inches long, and are separated at their lowest points by a distance rather greater than their length. The front wall of the abdomen occupies the triangular space between the ridges. The lower end of each ridge is curved, and it is here that the cartilage of the tenth rib curves upwards towards the chest ; the top of each ridge is formed by the cartilage of the seventh rib, therefore the finger, in passing along the ridge from below upwards, touches in turn the tenth, the ninth, the eighth, and the seventh rib cartilages. This junction is the meeting-place of the seventh rib cartilage on each side with the end of the bony part of the breast-bone (sternum), and is called *the pit of the stomach*. Place a finger of the left-hand upon this point, and a finger of the right-hand upon the top of the sternum (which can easily be found at the back of the collar a little below the collar-stud, in the form of a circular depression between the two central ends of the collar bones), this point is named *the pit of the neck*.

The part between the two fingers, that is between the pit of the neck and the pit of the stomach, is the breast-bone or sternum, and the vertical line in the diagram is accordingly called the sternal line, while the divergent lines are called the right and left ridges.

This sternal line is about seven inches in length in an averaged-sized normal chest.

The Curves of the Diaphragm.

The curved lines at the sides represent the outline of the chest-walls as seen from the front ; they reach from the ends of the ridges below to a point a little outside and above the sternal line. It will be noticed that the chest enclosed by these lines is shaped like a cone, and that the widest part of the cone is opposite the pit of the stomach. At

the lower end of the sternal line is a line which is fairly straight in the centre, but well curved on each side, with the curve on the right side bolder and larger than that on the left. This double curved line (D) represents the highest points reached by the floor of the chest (a musculo-membranous partition, called the diaphragm). This partition separates the lungs and heart (H) contained in the chest, from the liver (L) and stomach (S) contained in the abdomen.

The straightened part of the diaphragm forms a floor for the heart to rest upon, while the two curves form a floor for the lungs. The larger curve on the right arches over the liver, and the lesser curve on the left over the stomach.

It may be said that the diaphragm is made to fit the liver.

The place where the heart strikes against the chest-wall when it beats,

Outline of Heart. can easily be found by placing the hand upon the left side of the chest while lying upon the left side on a bed or on a sofa. This point is about half-way between the sternal line and the outline of the chest-wall, on the left side on the curved partition line. A curved line, drawn from this point to a point about two-thirds of the way up the sternal line, joined to another curved line from this

point to the partition line just to the right of the end of the sternal line, forms the outline of the heart. A curved line from the point of the heart-beat to the end of the right ridge, gives the outline of the lower border of the liver, while the left curve of the partition line, carried on to join the curve representing the lower end of the liver, gives the outline of the lower end of the stomach.

The outline of the right lung is found by drawing a line just to the right of the sternal line, and a curved line just inside the right side of the cone to a point where the cone is widest; these two lines to be joined at the top and bottom so that the lung is shaped like a sugar-loaf. The outline of the left lung is similar to that of the right, except that it leaves a somewhat triangular space over the heart uncovered.

The diaphragm, forming the floor of the chest and the roof of the abdomen, rises to a considerable height in the chest, so that the dome-shaped roof of the abdomen encroaches greatly upon the space of the chest cavity, diminishing the chest and increasing the abdomen. The abdomen occupies about two-thirds of the trunk. The lower ribs lie over the liver on the right and over the stomach on the left.

The lungs overlap the dome-shaped roof in front, and hence the outline of their lower border is placed at a lower level.

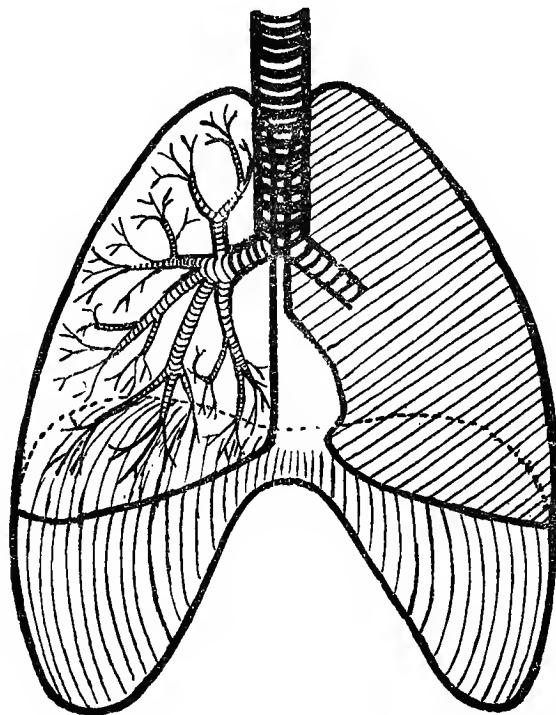


FIG. 20.—THE TRACHEA AND ITS MAIN BRANCHES.

For the sake of simplicity a space is left between the outline of the organs and of the cavities in which they are contained, but no such space in reality exists in the body.

By the use of this simple diagrammatic sketch, a clear idea of the position of the lungs in the human body can be obtained, and it will be noticed (1) that, the lung being cone-shaped, there is a greater amount of lung tissue towards the base than anywhere else; (2) that the bottom of the lung is on a level with the pit of the stomach; (3) that the floor of the chest arches upwards to a higher level. This makes the base of the lung concave in shape instead

of flat, and so diminishes the amount of tissue contained in its very lowest parts. From these three observations it may be concluded that in order to obtain whole-lung action in breathing, it will be necessary to move the chest-walls most where they enclose most lung tissue, and that the position is on a level with the pit of the stomach.

Fig. 20 shows the windpipe giving off the main air-tube to each lung. The larger air-tubes are shown on the left side of the diagram. The lungs on both sides are overlapping the diaphragm, forming the curved floor of the chest. The highest position reached by the diaphragm is represented by a dotted line. The diaphragm is seen to be attached to the inside of the lower rim of the chest.

Air-Tubes. For vocal purposes the motor part of the vocal apparatus may be regarded as a system of air-tubes ending in air-sacs. The air-tubes are

called the bronchial tubes of the lungs, and the air-sacs the air-cells of the lungs. The lungs are contained in a hermetically closed cavity—the chest—and can only communicate with the outside world by means of the windpipe and its connection with the nose and mouth. In order to facilitate the movements of the lungs inside the chest a closed sac, called the pleura, is interposed. One layer of the sac envelopes the lungs, and the other layer lines the chest walls; the two opposed inner surfaces are moistened by a fluid secreted by the pleura, and thus friction is prevented.

Air cannot pass from the chest into the abdomen, as it is supposed to do by some advocates of abdominal breathing. If air escaped from the lung into the pleural sac, it would cause collapse of the lung, and if it escaped from the pleural sac, it would be prevented by the diaphragm from getting into the abdominal cavity.

The windpipe (*see Fig. 36*) is a somewhat cylindrical-shaped piece of one-inch elastic tubing, about four inches long. About two inches above the pit of the neck it ends in the voice-box (larynx), and about an inch above the middle of the sternal line it divides into a right tube going to the right lung, and into a left tube going to the left lung. There are from fifteen to twenty rings of a fairly strong elastic substance called cartilage; incomplete behind, they keep the windpipe open. Muscular fibres are attached to the ends of the rings, and by contracting diminish the calibre of the windpipe when required. The cells lining its inner coat are covered by minute hair-like projections called cilia. Somewhat resembling extremely small and mobile eyelashes, they move to and fro in a rhythmical and harmonious manner, and so cause a current of mucus containing entangled solid particles to pass towards the throat; thus the ingoing air is filtered and so purified. All the air-tubes are lined with ciliated cells.

Air-Cells. The main tube on entering the lung gives off main branches directed to the upper, the middle, and the lower parts of the lungs. These branches branch and re-branch, so that a regular system of air-tubes is

formed, which continuously diminish in calibre until they become microscopical in size. The sides of the microscopical air-tubes are pouched; the pouches so formed represent the air-cells of the lungs. It has been estimated that the lungs contain about five hundred million air-cells. The main air-tubes are kept open by portions of cartilaginous rings. The air-cells are about one-fiftieth of an inch in diameter, and the whole of their internal area is said to be equal to seven times that of the whole external area of the skin.

Around each air-cell is a network of capillary blood-vessels arranged as a $1/3000$ th of an inch meshwork. Oxygen passes from the air into the blood, and carbonic acid gas from the blood into the air through the thin walls of the air-cell and capillaries, and thus the function of respiration is performed.

Air Capacity of Lungs. The whole of these air-tubes and air-cells are filled with air; the capacity of these air spaces in the lungs has been ascertained by measuring the quantity of air that can be expelled by exerting the greatest force in breathing out air that has been breathed in by the largest possible intake of breath. The average capacity of the healthy adult male is stated

to amount to 250 cubic inches (about four litres, or seven pints). There is still left in the lungs a quantity of air that cannot be forced out by breathing, about 100 cubic inches (a litre and a half, or nearly three pints), making ten pints in all. An adult can by forced breathing, breathe in and out about seven pints of air (250 cubic inches, or 4,000 c.c.). In quiet breathing while the body is at rest (breathing of repose), the healthy adult breathes in and out about seven-eighths of a pint of air (thirty cubic inches, or 500 c.c.).

It follows from the above calculations that it is possible for a normal man to breathe in and out from one to seven pints of air while doing a breathing exercise. What amount is likely to bring about the best development of the motor apparatus has never been determined; it is fairly safe to conclude that breaths of one pint would prove inefficient, and that breaths of seven pints would engender too much effort; while breaths varying in quantity from three to four pints are most likely to produce the best results. This seems to be borne out in the practice of breathing exercises, for it is quite certain that elasticity and efficiency are brought about by the daily practice of breathing in and out moderate quantities of air.

**Short, Medium,
and
Long Breaths.**

In ordinary conversation long breaths are seldom, if ever, used; medium breaths are seldom taken; the bulk of the work is done by short breaths. In lecturing and teaching, short breaths are continually taken as well as medium breaths; long breaths are seldom used. In singing and dramatic speaking long breaths are used, but short and medium breaths are equally necessary. In teaching breathing for voice it is necessary to take this into consideration, and to teach medium and short breathing. By practising the breathing of medium and short breaths, elasticity and control of the chest walls are much more easily acquired, whilst the taking of long breaths (often called deep breathing) is frequently the cause of strain and rigidity, both of which mean loss of respiratory potentiality: the term deep breathing is answerable for much damage to the voice and health. The crude, forcible methods too often adopted for breathing exercises are useless for and even harmful to the voice. Breathing exercises for the voice must be definitely artistic in character. Short and medium artistic breathing exercises will enable the student to take artistic long breaths when required.

Some authorities question the desirability of teaching breathing exercises in ordinary physical training. The following extracts are taken from a manual of Military Hygiene.

"So called breathing exercises are unnecessary. The rate and depth of breathing are determined by the condition of the blood, and are adjusted to such a nicety that no artificial method can ever be an improvement. Nasal breathing is normal during rest and slight exercise, but it is wrong to insist on such a form of breathing during hard work; mouth breathing under such conditions is natural, for it offers less resistance to the passage of air to the lungs and also assists in cooling the body."

"The natural method of improving the 'wind' is progressive running. A good 'wind' is the capacity of the heart and lungs to accommodate themselves to the demands made upon them by muscular work. Training, in short, is the training of the heart, and if during the process the heart of a healthy man becomes weaker or disordered in its action it is probable that the training is bad."

"Training involves the accommodation of the recruit to an outdoor life. Work in the open air 'hardens' a man, diminishes his liability to colds, and improves his appetite and digestion; advantages which physical training inside the gymnasium does not possess in a like degree."

It must be noted in connection with breathing, that the entering air does not sink down into the air-cells; the air-cells are already full of the residual air, that cannot be breathed out even by forcible means; the fresh air breathed in flows on to the top of that already in the lungs and flows out again when breathed out. The physiological exchange of gases takes place by the law of infusion of gases; the oxygen infuses from the tidal air into the residual air, and the carbonic acid gas infuses from the residual air into the tidal air.

The two Attachments of the Diaphragm.

The abdominal walls have the power of fixing the two attachments of the diaphragm. If the walls are drawn in, the organs in the upper part of the abdomen are *supported in the arch of the diaphragm*. The tendon is supported and its muscular fibres working from within outwards elevate the ribs by shortening in contraction.

But if the abdominal walls are allowed to *protrude forward* in a relaxed state, the tendon is *unsupported* and *descends* as the muscular fibre working from without inwards shortens in contraction.

This conclusion is different from that usually taught. Writers and teachers taking note only of the action of the diaphragm in which the tendon descends when the ribs are fixed, usually make the erroneous statement that *the ribs can be elevated and the diaphragm depressed at one and the same time*. This is only possible to a certain degree. If the diaphragm contracts when the tendon is fixed, the action is similar to that of the *intercostal muscles*; but if the tendon descends, the action is *directly opposed* to the intercostal movement.

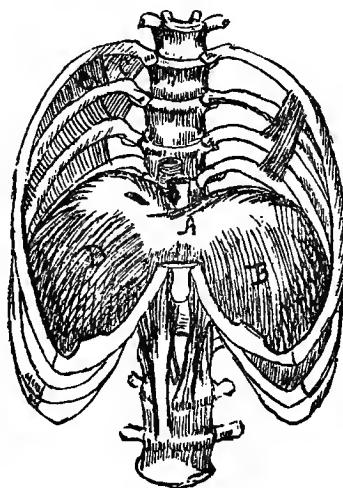


FIG. 21.—THE DIAPHRAGM.

Note the trefoil arrangement of the tendon, A, and the distinct attachment of the muscular fibres, B, to the tendon on the one side and to the bones on the other (to the inside of the lower rim of the chest and to the front of the lumbar spine). The action of the muscle is determined by the fixation of one or other of these attachments. If the tendon is fixed, the ribs are moved; if the ribs are fixed, the tendon is moved.

C. Intercostal Muscles (filling the spaces between the ribs) (see Fig. 22).

The Expansion of the Base of the Chest. It is clear from the mathematical point of view, that in the expansion of a cone the diameter of the base is by far the most important diameter to be considered. The diameter of the cone-shaped chest is increased by the combined action of the intercostals and the diaphragm. The ribs being shaped like a bow, and the joints between the ribs and the spine being arranged to allow the bows to move outwards when the ribs are elevated, it follows that the diameter of the base of the chest from side to side is increased whenever the ribs are raised. The lower ribs being longer and more bowed in shape than the upper, the diameter of the base is still further increased from side to side; the breast-bone is also thrust forward, so that an increased measurement is obtained in the diameter of the base of the chest from front to back.

Abdominal Breathing.**What it Sacrifices.**

In abdominal breathing the important increase in the diameter of the base described above is sacrificed, and all that is substituted for it is the comparatively unimportant increase in the diameter from the top to the bottom of this cone-shaped chest.

No scientific explanation has been given as to how expiration can be subjected to the will when the abdominal system of breathing is practised, whereas by the method adopted in this book there is no difficulty in giving a full and satisfactory scientific explanation of *how expiration is completely controlled by the will*.

The following is a quotation from an authoritative anatomical work, Quain's "Text-Book of Anatomy":

Quain's Explanation.

"*Action of the intercostal muscles.*—The manner in which these muscles act has been a subject of controversy from an early time,

and is not yet thoroughly determined. It is now generally agreed that the external muscles are elevators of the ribs, and therefore muscles of inspiration; but as to the action of the internal muscles there is still considerable difference of opinion. According to one view, defended by Haller, the external and internal layer have a common action. . . . According to another

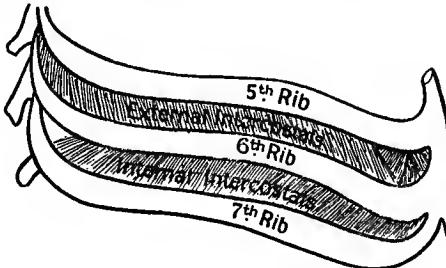


FIG. 22.—THE INTERCOSTAL MUSCLES.

Arranged in double layers between each pair of ribs, the External Intercostals on the outside, with fibres directed downwards and inwards, reach from the spine at the back to the costal cartilages in front; the Internal Intercostals on the inside, with fibres directed downwards and outwards, reach from the sternum in front to the angle of the ribs at the back.

view, that of Hamberger, the external intercostal muscles are admitted to be elevators, but the internal are held to be depressors of the ribs. More recently these views have been modified by Hutchinson to the extent of admitting that the external intercostal muscles, and the parts of the internal intercostals placed between the costal cartilages, elevate the ribs; and that the lateral portions of the internal intercostals act as depressors.

Action of the Breathing Muscles.

"*The action of the diaphragm* is more easily understood than that of the intercostal muscles. By its contraction and descent its convexity is diminished, the abdominal viscera are pressed downward, and the thorax expanded vertically. The fibres arising from the ribs, being directed nearly vertically upwards from their origins, *must tend to raise those ribs*, and Duchenne has shown that the contraction of the diaphragm by itself elevates and expands the upper ribs to which it is attached, but only so long as the vault of the muscle is supported by the abdominal viscera, for when they are removed it no longer has that action.

"*Expiration.*—In normal and quiet expiration the diminution of the capacity of the chest is mainly, if not wholly, due to the return of the walls of the chest to the condition of rest, in consequence of their own elastic reaction, and of the elasticity and weight of the viscera and other parts displaced by inspiration; the lungs themselves, after distention by air, exert considerable elastic force, and no doubt the ribs and their cartilages react strongly by their elastic return from the elevated and expanded condition into which they have been thrown by the inspiratory forces."

Unsatisfactory Explanation of Expiration.

It does not appear clear from this description of the actions of the breathing muscles, that there exists a satisfactory explanation of how the expiration can be controlled ; yet this explanation is of paramount importance to those interested in the correct method of breathing for voice. By the ejection of the breath the vocal cords are made to vibrate, and by their vibrations sound is produced ; this sound will be pure or faulty according to the manner in which the air is made to play upon the cords.

We have learnt that the chest is expanded in inspiration by (1) the raising of the ribs by the contraction of the intercostal muscles, (2) by the depression of the floor of the chest by the contraction of the diaphragm, and that the elasticity of the raised ribs and cartilages, and of the stretched air cells and tubes of the lungs, and of the displaced viscera, create a sufficient

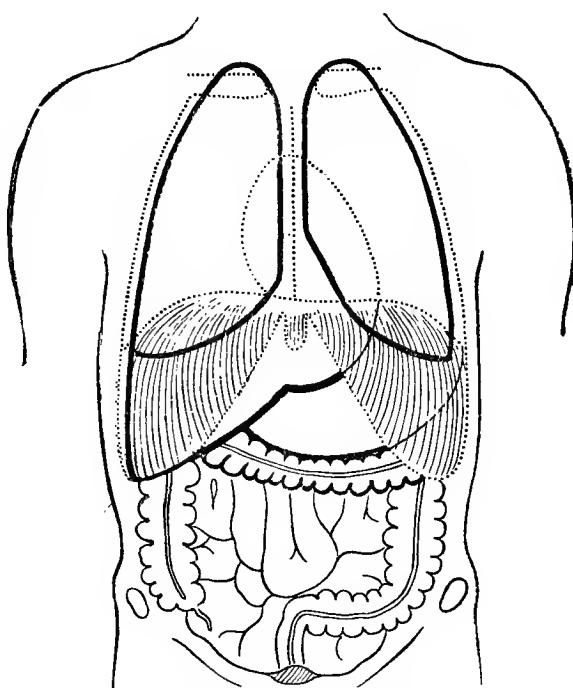


FIG. 23.—THE VAULT OF THE DIAPHRAGM SUPPORTED BY THE ABDOMINAL VISCERA.

NOTE.—(1) The three lines outlined by dots ; (2) the dotted Diaphragmatic line ; (3) the dotted outlines of the Chest ; (4) the dotted outlines of the inner part of the Clavicles ; (5) the dotted outline of the Heart ; (6) the dark outline of the Right and Left Lungs with their bases overlapping the Diaphragm ; (7) the dark outline of the side and lower border of the Liver (continued under the Diaphragm as a thinner line) ; (8) the dark outline of the lower end of the Stomach (continued under the Diaphragm as a thinner line) ; (9) the Intestines occupying the lower part of the Abdomen ; the Large Intestines consisting of the Ascending Colon with its Vermiform Appendix on the Right, the Descending Colon on the Left, and the Transverse Colon passing from Right to Left across the centre ; the Small Intestines coiled up behind and between the Large Intestines ; (10) the Bladder just above the Pelvis ; (11) the front of the Hips ; and (12) the Groins.

force for the contraction of the chest in expiration : *but there is no mention made of the way in which this elastic force can be controlled by our will.* We must therefore make a more extended inquiry into the mechanism of breathing in order to discover the controlling influence.

Keynote of the Position.

The keynote of the position is in the action of the diaphragm described by Duchenne, who has shown that *the contraction of the diaphragm by itself elevates and expands the ribs to which it is attached so long as the vault of the muscle is supported by the abdominal viscera.*

The diaphragm is attached to the spine behind, to the six lower ribs at the sides, and to the sternum in front, and forms an arch over the organs contained in the abdominal cavity; the stomach and liver fit into the concavity of the arch, and are only separated from the lungs and the heart, the organs contained in the chest, by the muscular partition, the diaphragm. Hence the cause of palpitation and shortness of breath from flatulency and enlarged liver, for the heart and lungs, being displaced by the enlarged abdominal organs, fail to do their work properly.

Action of Abdominal Muscles.

The abdominal viscera can only support the vault of the diaphragm when they are held in position by the abdominal muscles. These muscles form the walls of the abdomen and stretch from the chest above to the bones at the bottom of the spine, which, together, form a sort of basin and are named the pelvis. These abdominal muscles are called oblique, straight, and transverse according to the direction of their fibres.

The body is divided into two parts by a movable partition—the diaphragm—which may be called a party-wall, for it forms the floor of the chest and the roof of the abdomen. The outer walls of the body are also movable, and both cavities are filled quite full with organs, blood-vessels, and other structures. Any movement of the party-wall must affect the size and shape of both the cavities, and it is impossible to alter the shape of one cavity without affecting the other.

Much has been written and taught about the effect of the movement of the chest upon the shape of the abdomen, but little has been said about the effect of abdominal movement upon the shape of the chest. The abdominal muscles are voluntary muscles, and abdominal movements can be made to become quite subservient to the will. By these movements the shape of the chest, and consequently the action of the lungs, can be controlled.

The abdomen is a closed cavity; its shape may be likened to a large but short bread-pan, to which has been fitted a dome-shaped roof. Its walls are composed of muscles and bone. The spine between the ribs above and the pelvis below forms, with the back muscles on each side of it, the posterior wall of the abdomen; the sides and front walls are formed by the muscles joining the ribs above with the pelvis below, called the abdominal muscles.

The roof consists of the tightly stretched diaphragm inside the bony cagework formed by the lower ribs.

The abdominal muscles by contracting can draw the chest towards the pelvis, or the pelvis towards the chest, or they can constrict the cavity by their transverse fibres.

The action of the abdominal muscles can be easily understood if the following movements are made in the reclining position:—

- (1) Raise the body from a lying to a sitting position. The abdominal muscles, working from their attachment to the pelvis, which is fixed by being kept on the ground, draw the chest towards the pelvis.
- (2) Raise the pelvis by carrying the legs over the head. The abdominal muscles, working from their attachment to the ribs, which are fixed by being kept on the ground, draw the pelvis towards the chest.
- (3) Draw the front abdominal wall inwards, keeping the chest and pelvis on the ground. The abdominal muscles not being able to move the chest or the pelvis when they contract, draw in the front and side walls of the abdomen, and so constrict the abdominal cavity, mainly by the fibres which pass around the abdomen, called accordingly the transverse fibres or transverse muscle.

In the well-known exercise of bending the body downwards, to touch the ground with the fingers, the abdominal muscles are working from the pelvis upon the chest. In climbing a rope, the abdominal muscles are working from the chest upon the pelvis. But if the chest and pelvis are not allowed to move when the abdominal muscles contract, the abdomen becomes constricted. (Abdominal press.)

Raise the body straight up from a recumbent into a sitting position, and the straight muscles stand out prominently in front; raise the body sideways, and the oblique muscles at the sides become prominent.

Quain's Descriptions. "The abdominal muscles not only form a great part of the wall to enclose and support the abdominal viscera, but by their contraction are capable of acting successively on those viscera, *on the thorax*, and on the vertebral column. *When the pelvis and thorax are fixed the abdominal muscles constrict the cavity and compress the viscera. . . .*

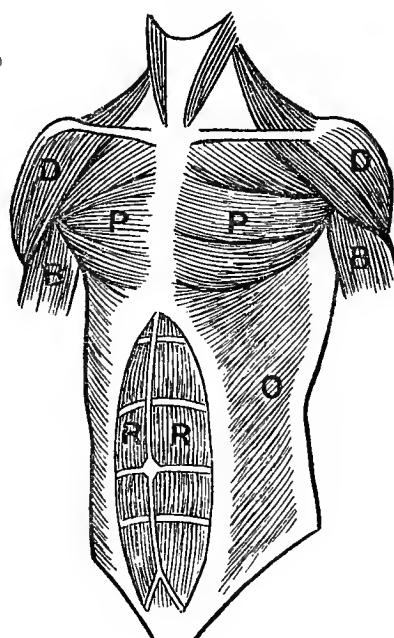


FIG. 24.—THE ABDOMINAL MUSCLES.

The fibres of the Abdominal Muscles join the bones of the Chest with the bones of the Pelvis, and are named according to their direction, Straight (or Rectus, R), Oblique (O), and Transverse (not shown in diagram).* The Pectoral Muscles (P) attached to the front of the Chest and to the front of the Humerus, the Deltoid Muscles (D) overhanging the shoulders and the Biceps Muscles (B) in front of the Arm, the Sterno-Mastoid Muscles on each side of the centre of the neck, and the front part of the Trapezius Muscles above the shoulders, appear in the diagram.

In this connection, Quain says:—

"If the vertebral column be fixed, these muscles raise the diaphragm by pressing on the abdominal viscera, draw down the ribs, and contract the base of the thorax, and so contribute to expiration; but if the vertebral column be not fixed the thorax will be bent directly forwards when the muscles of both sides act, or inclined laterally when they act on one side only, or rotated when the external oblique of one side and the opposite internal oblique act in combination."

* The Transverse Muscle is underneath the Oblique Muscles, and its fibres run transversely around the Abdomen.

"If the thorax be fixed the abdominal muscles may be made to act on the pelvis: thus, in the action of climbing, the trunk and arms being elevated and fixed, the pelvis is drawn upwards, either directly or to one side, as a preparatory step to the elevation of the lower limbs."

It seems quite clear from this description of the action of the muscles of respiration and of the abdominal muscles, that the abdominal muscles have many and varied functions to perform, and that they accordingly merit much more attention than the majority of people seem inclined to bestow upon them. From a health point of view they certainly rank amongst the most important muscles of the body, and yet they are the most neglected. Let us examine their function more closely, and learn the position they take in vocal culture.

A natural girdle is thus formed to support the abdominal organs,

The Abdominal Muscles form the chief of which are the stomach and intestines, the liver, the

Wall of the pancreas, spleen, and kidneys. The digestive organs suffer most if the

Abdomen and muscles become weak and flabby, for, being insufficiently supported,

enclose the they gradually slip down into the protuberance formed by the

important organs distension of the weakened wall. Cause and effect react one upon

contained therein. the other. The poorly-developed abdominal muscles have not sufficient

strength to support the weight of the viscera. They stretch and

protrude, and fat forms in and around them; the digestive organs

cannot faithfully fulfil their purpose, and the whole system, including, of course, the abdominal

muscles, suffers, and these become weaker still—hence more protuberance and more displace-

ment, and digestion becomes further impaired. Are not singers often remarkable for their

protuberant abdomen? They appear as if they had allowed their chest to "slip

moorings." It is not at all uncommon to hear the remark made that it is impossible to sing

well unless you are fat. This is a great fallacy. Singers cannot expect to keep the

vocal apparatus in good condition unless they pay the greatest attention to their health.

It is quite possible that a singer possessing an unusually good voice may be able to achieve

great results for a time, but the voice will not last so long as it would if the laws of

nature were duly heeded.

By contraction The muscular action of the digestive organs is thus stimulated,
the Abdominal and as it is by the muscles of the stomach and bowels that the food
Muscles press is carried from one part to another, every opportunity is afforded
upon the the digestive juices for acting upon the different foodstuffs so as to
Abdominal make them in a suitable condition for being absorbed by the blood.
Viscera. Unless this action, called the peristaltic action of the muscles of the
alimentary canal, is duly performed, a form of indigestion, commonly
called sluggish digestion, accompanied by much flatulency, is sure

sooner or later to be induced; the foundation, as it were, of innumerable other ills, nervous
affections of all kinds—hysteria, hypochondriasis, and the like; inability to enjoy life either
when at work or at rest.

The inert organ, the liver, is quite dependent upon the contraction of the abdominal
muscles for the promotion of a good circulation of blood within itself. It contains no muscles
of its own, and so has no inherent motor power for pushing on its circulation; but every time
it is squeezed between the diaphragm and the abdominal muscles it is emptied of its
blood, and a new supply is allowed to flow in. People leading sedentary lives are certain to
suffer from a congested state of their liver, and the symptoms are too well known to need any
description here. They can be relieved, however, by proper exercise of the diaphragm and the
abdominal muscles, for whenever any of these muscles contract, they must press upon the liver;
but it is of course still more forcibly acted upon when it is squeezed between the contracting
muscles.

**By Contraction
the Abdominal
Muscles act upon
the Thorax, and
have a three-fold
effect.**

(a) THEY ASSIST EXPIRATION IN THE FORM OF BREATHING, CALLED ABDOMINAL BREATHING, BY PRESSING ON THE ABDOMINAL VISCERA, DRAWING DOWN THE RIBS, AND CONTRACTING THE BASE OF THE THORAX.

When the diaphragm contracts by working from within outwards, the floor of the thorax becomes changed from a dome-shape to one almost flat—in other words, the diaphragm descends, and pushes the abdominal organs downwards. Space has to be found for them, and this is done by the abdominal muscles being pushed forward, and so the shape of the cavity is changed.

This descent of the diaphragm increases the size of the chest vertically, and air rushes in to fill up the increased space ; this is the form of inspiration called diaphragmatic, which is much more commonly used by men than women with tight-fitting garments. By inspiration the diaphragm is depressed, and the abdomen is pushed forward. Then follows an expiration, the abdominal muscles by contracting pressing the displaced viscera against the diaphragm, and pushing it up again in its relaxed state to its former position, arching up into the chest ; thus the air is ejected from the contracted lung space.

(b) THEY ASSIST INSPIRATION IN THE FORM OF BREATHING, CALLED THE LATERAL COSTAL BREATHING.

If, instead of allowing the diaphragm to descend when it contracts, and unresisted to push the abdominal contents and its wall forward, the liver and stomach are supported in the arch and are hindered in their descent by the contraction of the abdominal muscles—as in the action of the diaphragm described by Duchenne—then by working from without inwards, instead of causing a protuberance of the wall of the abdomen it elevates and expands the chest, which is not only of great importance for the furtherance of health and beauty of figure, but is also of inestimable value to singer, speaker, and elocutionist, who have here a method of breathing in entirely under the control of their abdominal muscles. Air will enter the chest when expanded by this method more easily than is ever possible by the unrestrained contraction and descent of the diaphragm.

**How this
method works.**

By this method of breathing—which we will henceforth call the LATERAL COSTAL method—the contracted abdominal muscles support the stomach and liver in the arch of the diaphragm, so that in its contraction it expands and raises the chest during inspiration.

**The old
Italian School.** It is maintained by the Author that this is the explanation of the method used by the old Italian School, in which it was taught that the abdominal wall should be *slightly retracted*—that is, that the abdominal muscles should be contracted and the vault of the diaphragm supported, and that an efficient inspiration be taken, by which the diaphragm raises and expands the chest.

This scientific explanation is, so far as the Author is aware, original, as are also the hygienic and vocal arguments in its favour, as opposed to those advanced in support of the abdominal system introduced into this country by Mandl in 1855.

(c) WHEN THE PELVIS AND THORAX ARE FIXED, THE ABDOMINAL MUSCLES CONSTRICT THE CAVITY AND COMPRESS THE VISCERA.

The constriction is effected mainly by the transverse muscle of the abdomen (the straight muscle is mainly engaged in bending the body directly downwards, and the oblique muscles in bending it obliquely). The transverse muscle is very intimately connected with the diaphragm, its insertions actually inter-digitate with the insertions of the diaphragm into the six lower ribs. It is strongly suggested that this intimate connection is the explanation of the undoubted power that the abdominal muscles possess of being able to control the expiration in “breathing for voice.”

It was definitely laid down in Chapter III. that the vocal apparatus must be kept in a condition of tonicity during vocalisation. This applies to the floor of the chest, "the diaphragm," as well as to the walls of the vocal apparatus. The diaphragm is the chief muscle engaged in the purely automatic action of the "breathing of repose," and is quite involuntary in action ; but it has to be made voluntary in action when used for "breathing for voice." It is quite probable that it can be most easily and directly controlled through the agency of its intimate relationship with the transverse muscle, which is definitely voluntary in character.

The Abdominal Press and Tonicity. The regulation of the tonicity of the abdominal muscles is the chief practical agent for maintaining the right degree of tonicity of the vocal apparatus during vocalisation, and affords an excellent example of the way in which involuntary muscles can be directly controlled by voluntary muscles.

The tonus of the diaphragm is in all probability directly influenced by the tonus of the transverse muscle ; if so, it becomes simple to understand why it is that "the abdominal press" is of such vital importance in voice work. "The abdominal press" is the term used to express the drawing-in of the front abdominal wall during expiration for vocalisation—that is, while voice is being made. This drawing-in is performed by a contraction of the abdominal muscles, and if, as seems highly probable, the diaphragm is directly influenced thereby, the diaphragm will be kept in a state of contraction so long as the abdominals are contracted and will not relax until they are relaxed.

While breathing-in for voice it is necessary to keep the abdomen in that condition of tonicity that will prevent its walls from protruding forward or from being drawn-in ; while breathing-out for voice—that is, while voice is actually being made—the abdominals are definitely contracted and the front wall of the abdomen is definitely drawn in. Like the condition of tonicity the amount of contraction and so the amount of drawing-in is proportionate to the purpose to be fulfilled, and depends chiefly upon the intensity of voice required and the length of the phrase ; in other words, the abdominal press varies with changes in the intensity of voice or in the length of the phrase.

The abdomen must be kept contracted as long as voice lasts, and inasmuch as air is escaping all the time, the drawing-in will gradually increase. The abdominal press follows the raising of the floor of the chest as voice is being sustained to the end of the phrase by the outgoing air. When the phrase is finished a sudden relaxation of the abdominal wall (abdominal release) takes place, the diaphragm and vocal walls suddenly relax, and any surplus air that remains is suddenly released. This relaxation, short as it is in practice, gives rest to the vocal apparatus.

Different Kinds of Breathing. "Breathing for voice" is so very different from the "breathing of repose" that it is ridiculous to conclude that what is right for the one must necessarily be right for the other, as those who have not studied the subject sufficiently are so ready to believe. In the "breathing of repose" the muscles of inspiration contract, the chest is thereby expanded, air enters, and when the inspiratory muscles relax, the air that has entered is forced out again by the elasticity of the expanded chest. In "breathing for voice" the tonus of the abdomen must be duly regulated all the time air is being breathed-in, and that tonus increased into actual contraction all the time voice is being made, relaxation only taking place, and that quite quickly, at the end of the phrase. A phrase really begins with the controlled breathing-in (preparation for voice) and finishes at the end of the controlled breathing-out (voice being made). Between the end of one phrase and the beginning of the next is the interval during which there is the short period of relaxation. This interval is much more physiological than vocal. It may be necessary to remind the reader, that even while breath is being used for vocal purposes, that same breath has to sustain life.

Upper-Chest Breathing for Voice.

Three distinct kinds of "breathing for voice" are used in practice by singers' and speakers, and have been carefully described. It may be well to make a simplified summary of the conclusions that have been arrived at. They can scientifically be styled (1) "Upper-chest breathing," (2) "Lower-chest breathing," (3) "Whole-chest breathing."

In "Upper-chest breathing" the work falls mainly upon the intercostal muscles, the chest in time becoming raised and pushed forward, and the abdomen drawn-in. This is a form of breathing which exaggerates the old Italian method of slightly retracting the abdomen. Its tendency is to stiffen the chest, to strain the upper part of the lungs, and so cause the condition known to the medical profession as "Singer's chest" (a bronchial or asthmatic state popularly described as "wheeziness"). The diaphragm is raised, and the vital organs are consequently higher than they should be. Control of expiration is difficult, as the elastic force of the expanded chest and lungs can be counterbalanced only by checking the relaxation of the over-used intercostal muscles, which is as unsatisfactory as it is difficult; undue effort is enforced in the control of expiration, as well as in the control of inspiration, from lack of the co-ordinate help of the diaphragm. This undue effort and stiffness of chest makes for hardness in vocal tone.

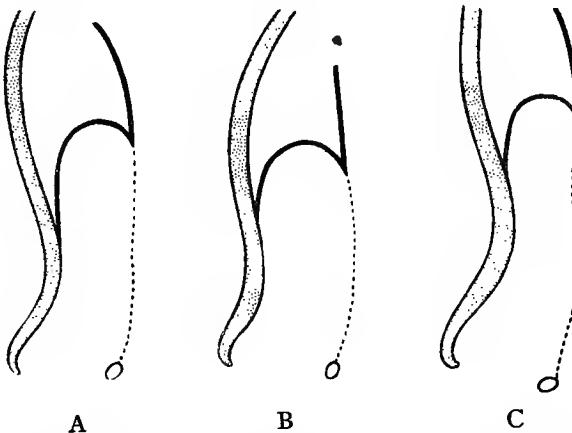


FIG. 25.—CHESTS, ABDOMENS, AND SPINES SHAPED ACCORDING TO THE KIND OF BREATHING USED.

- A—The normal body and spine of Whole-Chest Breathing.
- B—The lowered chest, protruded abdomen, and rounded back of Lower-Chest Breathing.
- C—The raised chest, retracted abdomen, and hollow back of Upper-Chest Breathing.

The wearing of garments that fit too tightly around the lower part of the chest predisposes to upper-chest breathing, consequently it is more prevalent in women than in men.

Collar-bone Breathing.

Collar-bone breathing by bringing into play the muscles of the neck, shoulder blades, and arms is a still greater exaggeration of upper-chest breathing; in this the work of the diaphragm is reduced to a minimum, and effort both in breathing-in and breathing-out reaches its maximum. Unfortunately this form of breathing, which cannot be commended from any point of view, is that universally taught in the form of physical education that is now in vogue. It has a baneful effect upon vocal tone, making it harsh, piercing, and very unmusical. If it is bad for tone in voice it is bad also for tone in health. Nature has liberally supplied breathing muscles for breathing purposes, and never intended that the chest should be expanded by the external extra-ordinary muscles of respiration, except in very exceptional cases—pathological rather than physiological.

Lower-Chest Breathing for Voice.

In "Lower-chest breathing" the work falls mainly upon the diaphragm, the chest in time becoming lowered and flattened and the abdomen protuberant. This is the so-called "Abdominal breathing" introduced and strongly advocated by Mandl. The diaphragm gradually gets lower in position, and consequently all the vital organs

slip down from their normal position with all the attendant evils that have already been mentioned. The control of expiration is effected by checking the contraction of the abdominal muscles. By allowing the diaphragm to contract from without inwards, the relaxed abdominal muscles are pushed well forward during inspiration; when they are called upon to contract in expiration, they have to work from a very bad position, and thus their control is so much interfered with that an artistic result becomes impossible. This form of lax breathing may feel easy, but lack of the co-ordinate help of the intercostal muscles mars its effect. Laxity in the control of the breath means breathiness in vocal tone.

The less the abdomen protrudes during inspiration the less abdominal the breathing becomes, the more it is helped by the intercostals, and it ceases to be purely abdominal, diaphragmatic or "lower-chest breathing." From lack of anatomical knowledge many forms of breathing are taught under the wrong name, and this leads to much unnecessary discussion. If the abdomen is well protruded while air is being taken-in, it will be noticed that very little air enters into the top of the lungs, and this part in time degenerates.

Abdominal protrusion means protrusion of the middle and lower part of the abdomen; the upper part of the abdomen must go forward as the lower part of the sternum is raised and advanced in inspiration.

Whole-Chest Breathing for Voice.

In "Whole-chest breathing" the work is done by the co-ordinate movement of the chief muscles of respiration, the intercostals and the diaphragm. The diaphragm, acting in harmony with the abdominal muscles, works from within outwards, and helps the intercostals to enlarge the chest from side to side and from before backwards; air enters easily and efficiently, and there is conservation instead of waste of effort. The chest and the abdomen swing out sideways during inspiration, and the front abdominal wall is neither protruded nor drawn-in below the ribs.

Expiration is easily controlled by the "abdominal press," that is, by the contraction of the abdominal muscles, which can be varied at will to suit the exigencies of the occasion. Thus artistic results can be obtained by breathing which makes for tone in voice.

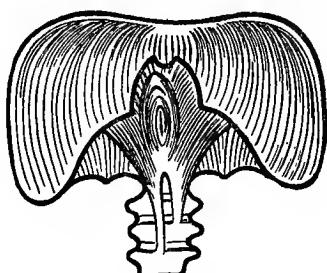


FIG. 26.—THE DIAPHRAGM
RELAXED (AT REST).

Note the strong attachment to
the Lumbar Spine.

The Liver affects the Action of the Lungs.

The liver, weighing about 3 lbs., is the largest organ in the abdomen; it takes up so much room that any alteration in its position is bound materially to affect the shape of the abdomen and so the chest. It lies in the concavity of the dome-shaped roof of the abdomen formed by the diaphragm, which may be said to be shaped to fit the liver, fitting it so accurately that it is probably kept in position by atmospheric pressure; but it is also supported by the other abdominal organs, and by the pressure of the abdominal

muscles, which are always in a tonic condition, and by its own ligaments. Its position alters with every respiration, ascending and descending with expiration and inspiration, and also slightly descending when the body changes from a reclining to an upright position. Its shape and position are altered by the condition of the adjacent organs. A distended stomach may push it well over to the right side, making it deeper; a distended intestine may flatten it and broaden it out. Its shape and position are materially affected by a mis-shapen chest, the result of a deformity or of tight-lacing. Constriction of the waist may grip the liver, its upper part being jammed into the dome—which, too, is diminished in size by the constriction—while its lower part is pushed down into the abdomen. If the waist is below the liver, the organ is made to fill the whole of the dome-shaped roof; the stomach, being displaced, takes up a lower position in the abdomen.

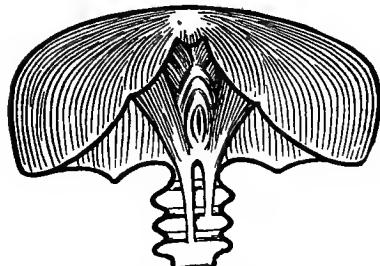


FIG. 27.—THE DIAPHRAGM CONTRACTED (AT WORK).

This is the co-ordinated contraction of Whole-Chest Breathing.

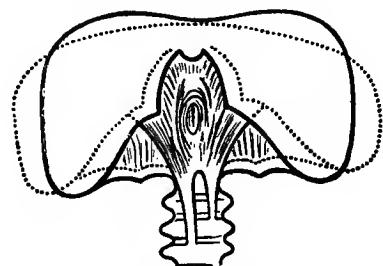


FIG. 28.—THE CHANGE IN THE SHAPE OF THE DIAPHRAGM.

At Rest (dark outline). At Work (dotted outline).

Co-ordinated contraction of Diaphragm in Whole-Chest Breathing.

The action of the diaphragm in breathing is determined by the position of the liver, which in turn depends upon the action of the abdominal muscles, and the following differences may be brought about:—

- (1) If the abdominal muscles are relaxed, the liver being allowed to descend during inspiration, the diaphragm in its contraction is allowed to flatten to its lowest extent, and the curve over the liver makes an excursion of over three inches.
- (2) If the abdominal muscles are forcibly contracted so as to constrict the abdominal cavity to its fullest extent, the diaphragm is unable to push the liver down during inspiration more than about half an inch.
- (3) If the abdominal muscles are kept in a condition of tonicity, the liver is allowed to descend about an inch and a half, and the diaphragm in flattening acts upon the ribs to which it is attached in such a manner as to carry them outwards and upwards.

This experiment was conducted by the Author while examined under X-Rays by the late Dr. Lyster (the eminent X-ray specialist, who lately died a martyr to science). A breath of about four pints was inspired for each experiment.

EURHYTHM.

Tables of the effect of types of Breathing on :

- (1.) The Breathing and Voice.
- (2.) Hygiene—vocal and general.
- (3.) Figure and Poise.

TABLE I.

BREATHING.	INSPIRATION.		EXPIRATION.		VOCAL APPARATUS.		VOICE.
1. Upper-Chest	Mostly Intercostal		Relaxation of Abdominals		Rigid	Hard	
2. Lower-Chest	Mostly Diaphragm		Contraction of Abdominals		Lax	Breathy	
3. Whole-Chest	Co-ordinate, Intercostal and Diaphragm		Abdominal Press		Tonic	Tone	

TABLE II.

BREATHING.	DIAPHRAGM.		VITAL ORGANS.		CHEST.	ABDOMEN.	
1. Upper-Chest	Raised		Organs too high and strained		Wheezy	Constipation	
2. Lower-Chest	Lowered		Organs too low and flabby		Degenerate	Flatulence	
3. Whole-Chest	Normal		Organs normal position and tone		Healthy	Digestion good	

TABLE III.

BREATHING.	FIGURE.		DORSAL CURVE, LUMBAR CURVE.		SHOULDERS.	CHIN.	PELVIS.	FEET.	BACK.
1. Upper-Chest	Protruded Chest and stiff		Diminished	Increased	Retracted	Back	Tilted up	Balls of toes	Hollow
2. Lower-Chest	Protruded Abdomen and lax		Increased	Diminished	Forward	Poked	Tilted down	Heels	Rounded
3. Whole-Chest	Normal figure and tone		Normal	Normal	Squared	Normal	Normal	Both piers	Normal

Healthy Breathing for Speech. The following are extracts taken from a report sent to the Voice-Training Conference of the University of London by the Committee appointed to "Investigate Normal Healthy Breathing in Relation to Speech":

"Whilst recognizing that the manner of breathing of healthy individuals may vary within certain limits, the sub-committee are of opinion that some general principles can be laid down with regard to the modification of breathing necessary for action (speech, singing, and exercise). They are further of opinion that their conclusions can most conveniently be presented in the form of general statements, which they believe to be of fundamental importance:

- "(1) The law of 'Reciprocal Innervation' governs all muscular contraction.
- "(2) Ideal breathing (for voice) is carried out by those muscular movements which produce efficient expansion of the chest, under perfect control (provided, always, those muscles are kept out of action which interfere with the action of respiration e.g., shoulder and neck muscles).
- "(3) Such breathing should bring every part of the lung into activity.
- "(4) Beyond a certain point, every additional gain in expansion of the chest is at the expense of control, and is liable to lead to permanent deterioration of the muscles and injury to the lung.
- "(5) Ideal breathing should secure a maximum of mobility of the chest and abdominal walls, such mobility being under perfect control.

"It will be advantageous to consider somewhat more fully in what manner, and to what extent, the normal respiratory movements are modified by the introduction of speech.

"In health, respiration properly carried out, brings the whole lung into activity, and in ordinary quiet breathing this process is (largely) automatic. Breathing for voice introduces a voluntary or quasi-voluntary factor—in addition to the purely respiratory function.

"By means which are under the control of the will the capacity of the chest can be so enlarged that varying amounts of air for varying requirements can be drawn into it over and above the amount required for the aeration of the blood.

"This bringing of the more or less automatic muscular apparatus of respiration under the direct influence of volition is what is meant by control; and without it sustained co-ordinated speech is impossible.

"Breathing for voice, as contrasted with the breathing of repose which is automatic and mainly diaphragmatic, presents certain new factors. Of these the employment of the diaphragm as a voluntary muscle is probably the most important.

"When the diaphragm acts in this way, in addition to its descent, which is the more obvious result, the lower ribs are elevated, increasing the transverse diameter of the body at this level, thus providing additional space at that part of the abdominal cavity for the viscera displaced by the descent of the diaphragm. Simultaneously the muscles of the abdominal wall come under the sphere of influence. In the breathing of repose the tonus of the broad muscles of the abdomen is such as just to admit of the necessary bulging forward which is determined by the downward displacement of the abdominal contents by the contracting diaphragm. In breathing for voice this tonus is increased, as can readily be appreciated by palpation. The effect of this hardening of the abdominal wall checks the outward bulging (which is no longer necessary), and by steadying the lower part of the chest takes a share in the control of expiration."

(Sgd.)	H. H. HULBERT. ARTHUR KEITH. W. PASTEUR. C. S. SHERRINGTON. PETER THOMPSON.
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Sentiment and Artistry in Voice Training.

It has been shown in the earlier part of this book that sentiment and artistry are the dominant factors in the production of speech and song. Sentiment controlling the mind (psychological) and artistry controlling the body (physiological). They are inter-dependent, and just as it is impossible to produce the more physiological artistry without mind, so

it is impossible to get the more psychological sentiment without movement. It is advisable to dwell upon this point, as voice-trainers are very apt to claim that all their good effects are due solely either to sentiment or to artistry, and, advocating the one school of thought, persistently confute the arguments advanced by those who favour the other school of thought. Heated discussions take place, and both sides are perfectly right to a certain extent, but both are also wrong in that they fail to recognise that one cannot be complete without the other.

The School of Sentiment.

The sentiment school decry all scientific attempts to explain the principles underlying vocal culture, insisting that vocal tone is purely psychological ; the trainer, by reason of his musical taste and especially of his musical ear, is able to get his results by imitation and by the development of correct aural tonal images. An advanced writer of this school stated that the production of voice in any form was altogether wrong, but that if the "word" was surrounded by the right "atmosphere" its production must be right. Of course it must ; but how is this atmosphere to be obtained? "By psychological means" is a very vague and unsatisfactory answer for those who are seeking enlightenment. It is a case of putting the cart before the horse. The atmosphere will be produced if the production is correct. The atmosphere is much more dependent upon the production, than the production upon the atmosphere. It is quite possible for voice-trainers whose sentiments are so strongly developed that they are almost if not quite geniuses, to get a good production ; but they often fail and are liable to ruin voices which are quite promising but possess definite idiosyncrasies. They cannot explain how they teach, but use such vague terms as by "imitation," by "developing tonal images," by "creating atmosphere," by "inspiration," by "dramatic expression," and lastly by "knowing what we want and persevering until we get it." Why not explain what it is they want, and what they persevere in till they get it? They want sentiment, and they persevere in artistry until they get sentiment. Imitation is artistry—that is, artistic movement acquired by a pattern instead of by an explanation. "Tonal images," "atmosphere," "inspiration," are all forms of "dramatic expression" by sentiment. Is it possible to express dramatically without artistry?

Does the advocate of sentiment make use of breathing exercises, or of any kind of voice exercises (scales, pronunciation, phrasing)?—if so, he is practising artistry.

The School of Artistry.

The cool calculating school of artistry labours through years of routine, all voices being put through the same mill. Exercises that have been handed down from generation to generation are faithfully enforced, the sanctity of tradition being quite a satisfactory plea for their undoubted utility. A voice that has successfully withstood the gruelling of the course is finally pronounced to be a trained voice. The method of gruelling of course differs, according to the particular system of exercises that the trainer himself has learned from his ancestors or has devised for himself. All he knows and all he wants to know is that he has gained great successes with his particular routine. He does not want to admit that he has had failures, but even if he has, other trainers have had failures too, and he is convinced that his system is better than any other system. Why is his system good? "Because it is," is no answer. "Because he gets successes" is not a satisfactory answer. What after all is the explanation of the success that is gained? Is it not a fact that some success is bound to follow any system that is persistently practised, but that the success is of small utility unless sentiment plays a great part in the artistry used?

Why not admit that sentiment and artistry should work together ; let the school of artistry learn from the school of sentiment how to project thought into action, and let the school of

sentiment learn from the school of artistry how necessary it is to have a supple and well-controlled bodily framework in order to be able to express dramatically; by being able to execute movements sufficiently artistically to show clearly the intention of the performer.

Does the advocate of artistry make any use of vocal expression? If so, in practice he is making use of sentiment.

The Practice of Artistry. The psychological school (sentiment) must admit that artistry is necessary to make the involuntary "breathing of repose" into the voluntary "breathing for voice." Voice-users must understand what is

meant by a phrase (the number of sounds made on any vocal expiration); that the length of the phrase is determined by the meaning (it may consist of one sound or of many sounds, it may be short or long, it may be *forte* or *piano*, *crescendo* or *diminuendo*, it may be intense or unemotional, it may be of great or small volume, it may be high or low in pitch, but in all cases it must be sustained to the very end of the last sound); and every sound must be correctly enunciated whether vowel or consonant, certain sounds being emphasised in accordance with the meaning. All this infers that the intake of air will vary, long inspirations being necessary for long, *forte*, intense, full-volumed phrases; and short inspirations for short, *piano*, unemotional and small-volumed phrases. There is undoubtedly much artistry required for the management of the breath and the articulatory apparatus in singing or speaking with varying intensity throughout a range of about two octaves; is there not also much artistry required in the management of the vocal instrument as a resonator on which the quality or tone so much depends? Merely possessing a normal vocal resonator will not ensure "tone in voice," it must be made subservient to the will by artistry.

Think again of the artistry required in the arts of pausing, of inflecting the voice, of pitching the voice so that the intonation or colouring of the tone of the voice may exactly harmonise with the sentiment that is being expressed!

The Practice of Sentiment. The physiological school (artistry) must admit that sentiment is necessary from the very beginning to the bitter end of voice-training in order to get "purpose in action," without which artistry is impotent and goalless. Sentiment creates interest, interest creates capacity for

taking pains, capacity for taking pains overcomes obstacles and difficulties—the mind makes the body more and more subservient, precision follows decision, and the voice eventually becomes a most faithful instrument of the mind; so much so that the voice echoes what the mind thinks. Artistry has through sentiment done its work so well that the artist possesses so much self-control that he is really unconscious of anything more than of the thoughts that he desires to express.

Good sentiment by poor artistry is turned into affectation, a fault prevalent in Cathedral choirs; good artistry by poor sentiment is turned into a meaningless light and shade interpretation.

Why should not the best choirs be able to rival the performances of the best orchestras? It is useless to contend that either sentiment or artistry is absent in the best instrumental work. Players of instruments without any sacrifice of sentiment devote years to training in artistry.

The Speech Zone. A Thought Centre. Regarding the unilateral centres of the speech-zone as being the centre of intelligence: suppose we substitute the word "thought" for the term "speech" or "word-understanding," and let us assume that the two extra centres are granted. Intellectual artistry means the expression of "auditory thought," "visual thought," "feeling thought"—that is, thought heard, seen, or felt—by "speaking thought," "writing thought," "breathing thought."

Clearly a case of artistry made intellectual through sentiment, which is the highest form of thought, a form of thought that can be developed only through control effected by intellectual artistry, artistry controlled by purpose in action. (See Fig. 15.)

By combining artistry and sentiment, the mind of the artist through the control of his expression (body) can so influence the minds of his audience, that they too are controlled by thoughts that are presented clearly and in order, so that the right atmosphere is created, and there is a noticeable absence of effort both in performer and audience—sentiment leading artistry, and artistry deepening sentiment, until all are imbued with the requisite amount of intensity belonging to the sentiment which becomes so evident in the artistry of the artist.

Breathing Exercises.

Control of the Breath by Exercises.

In order to do their work efficiently (that is, to regulate and compress the outgoing air when used for voice purposes) the breathing muscles must be placed in the most advantageous position. While breathing-in for voice the front abdominal wall must be motionless (the abdominal muscles being kept in the requisite degree of tonicity—neither contracted nor relaxed). The chest walls and the abdominal walls move outwards at the sides as the intercostal muscles and the diaphragm contract co-ordinately in whole-

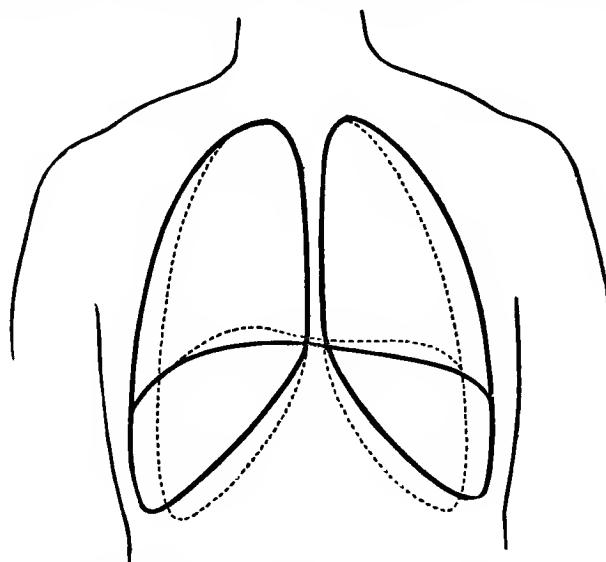


FIG. 29.—WHOLE-CHEST BREATHING AS SEEN FROM THE FRONT.

NOTE.—(1) The marked expansion of the chest sideways; (2) the definite but well-modified flattening of the diaphragm. The dotted outline represents the position of the chest-walls before inspiration, the dark outline represents the position of the chest-walls at the end of inspiration.

chest breathing and (1) the diameter of the base of the cone is enlarged from side to side; (2) the lower part of the sternum is carried forwards and upwards, and the diameter of the base of the cone is enlarged from before backwards; (3) the diaphragm flattens to a certain extent, and the chest is enlarged from above downwards. Air gradually flows in to fill up the extra space made in the lungs by the expanding chest.

This air is regulated and compressed during the breathing-out for voice by “the abdominal press” (the contraction of the voluntary abdominal muscles regulates the contraction of the semi-voluntary breathing muscles, and thus preserves the tonicity of the vocal apparatus during vocalisation).

The Breathing Position.

The position of rest (standing, sitting, or lying) with the fists resting lightly upon the sides of the chest just above the line of the waist. The elbows square to the front, pointing directly to the sides, the shoulders, elbows, and wrists being in the same plane.

Instead of the fists, the palms of the open hands may be placed upon the sides of the chest, just above the line of the waist, the thumb and fingers lying close together, the finger-tips of one hand being separated from the finger-tips of the other hand by six inches. It is, however, more difficult to keep the elbows square without causing stiffening of the chest-walls. The placing of the fists upon the sides of the chest oftentimes prevents a bad position of the shoulders and is more comfortable.

The chest-wall should be felt moving outwards as the breath is going in, and moving inwards as the breath is going out. The fists are placed there for that purpose only.

Position.—Attention.

Feet astride.

Fists on sides of chest. Elbows square to the front.

Breathing Exercise I. Place the closed fists lightly upon the sides of the chest-wall just above the waist line, and while breathing-in direct the sides of the chest-wall straight outwards, keeping the front wall of the abdomen quite still (neither protruding nor retracting it). Let the sides of the chest-walls move outwards easily, smoothly, and purposefully until a moderate quantity of air (about three pints) has entered the lungs and then, by lightly pressing with the abdomen (*i.e.*, by contracting the abdominal muscles), regulate the breathing-out of the three pints of air so that exactly the same time is spent in breathing-out as in breathing-in.

BREATHING EXERCISE I.

Position.—Breathing Position.

Breathe out.—Breathe out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

Repeat movements six to twelve times.

Notes.—The swing to be accomplished in the easy, graceful style of the artist. The chest to be free from stiffness and unhampered in movement, shoulders to be square to the front. Fists not to press upon side walls of chest.

By swinging out the ribs air enters the lungs during inspiration, and by swinging in the ribs air leaves the lungs during expiration; thus respiration is controlled by the swing of the chest-wall. This swing must simulate the “golf swing.”

Breathing Exercise II. In the second breathing exercise, the quantity of air breathed in and out is divided into three equal portions; each portion is equal to about a pint. The primary object of this exercise being to get a direct control over the movements of the chest-wall, it is very desirable that

the three quantities should be exactly equal, and that the intervals between the movements should be equal in length to that of the movements themselves. Another advantage to be gained by the exercise done in this manner is that the student learns how to take short breaths in the most efficient manner. The intake of three distinct short breaths, followed by the output of three distinct short breaths, is not actually done in the use of the voice; but the gain in the control of the breathing movements by the repetition of this exercise is so marked that it should be always included in the daily practice.

Each movement should be done smoothly, easily, and purposefully; there must be absence of jerk, strain, and rigidity, and no noise should accompany either the breathing-in or the breathing-out. The fists should be placed upon the chest in the same position as for the first exercise. The commands for the exercise are: Breathe-in 1, 2, 3—breathe-out 1, 2, 3. In commanding, let the voice dwell upon the sounds as long as the movement is intended to last, and let the intervening silence represent the length of the rest between the movements. Firm commands produce firm movements; short, shrill, and snappy commands produce jerky and purposeless movements which are useless for vocal purposes. Movements can be done quickly if necessary without any evidence of jerk in them.

BREATHING EXERCISE II.

Position.—Breathing Position.

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs 1, 2, 3. Breathe-in through nose.

(2.) Swing in the ribs 1, 2, 3. Breathe-out through mouth.

Repeat movements six to twelve times.

Note.—The mouth should be opened by allowing the lower jaw to fall by its own weight in a graceful manner. If the head is nicely balanced upon the spine, the chin will fall downwards and inwards towards the sternum.

The mouth should be opened wide enough to admit two fingers superimposed one upon the other being inserted between the teeth in front. The tip of the tongue should lie against the back of the lower teeth, and the top of the body of the tongue should be on a level with the top of the lower teeth.

In breathing-in through the nose, the air passes above the soft palate, which is consequently lowered; in breathing-out through the mouth, it passes below the soft palate, which is consequently raised—so that the soft palate is lowered and raised each time the exercise is done. The stiffening of the soft palate is so universal, and so largely accountable for the unpleasantness of the “Cockney” dialect, that exercise of the soft palate should form part of the earliest fundamental exercises for voice. With the mouth open the position of the tongue can be seen, and one of the most valuable exercises for the tongue is to make it take up its proper position in the mouth.

By breathing-in through the nose and -out through the mouth in this manner the muscles of the lower jaw, of the lips, of the cheeks, of the tongue, of the soft palate, and even of the throat are exercised.

The development of elasticity of the articulatory apparatus is of the greatest possible importance in the cultivation of vocal tone.

The student gains a definite idea of the quantity of air that is being breathed-in and -out, of the amount of movement of the chest walls that corresponds with that quantity ; and of what is meant by the term short breaths and medium breaths.

If the chest and the pelvis are not allowed to move when the abdominal muscles contract the abdomen becomes constricted.
Breathing Exercise III. This action of the abdominal muscles is of the greatest importance in the control of breathing for voice. The movement (the “Abdominal Press”) is a distinct drawing-in of the front abdominal wall, and should be practised daily by voice-users.

The third breathing exercise should consist of an abdominal movement, and should be performed as follows.

BREATHING EXERCISE III.

Position.—Breathing Position.

Movements.—(1.) Swing in the front wall of the abdomen (Abdominal Press).

(2.) Swing out the front wall of the abdomen (Abdominal Release).

Repeat movements six to twelve times.

Notes.—This movement should be made independently of breathing-in and breathing-out ; for if the breath is taken in while the abdomen is drawn in, upper-chest breathing will result. This exercise has already been used as a means of correcting a badly shaped chest (see exercises for correct poise).

The pushing forward of the chest-wall is not the object aimed at in voice-training; the chest-wall should be kept as quiet as possible, while the air inside the chest is compressed by the drawing-in of the front wall of the abdomen.

The vocal movement is much more delicate and refined than the physical movement, for it has a more finished and purposeful object in view.

In teaching the exercise for voice, it is as well to teach both kinds of movements, so as to differentiate the one from the other. It may also be mentioned incidentally that any improvement in the shape of the chest is good for voice. But rigidity of the chest-walls is always to be avoided.

Elasticity of the abdominal-walls is just as necessary for vocal tone as elasticity of the chest-walls, therefore the abdominal exercise should be practised lightly and fairly quickly; anything approaching a strong muscular movement being unsuitable for voice and also for health.

A light, elastic movement of the abdominal-walls is not only of the greatest possible value for vocal tone, but it gives improved tone to digestive action by a gentle and rapid massage of the abdominal organs, thereby stimulating their muscular action and increasing their blood supply. That this is borne out in practice, is proved by those who have found decided digestive improvement from the cultivation of vocal tone upon the lines here advocated.

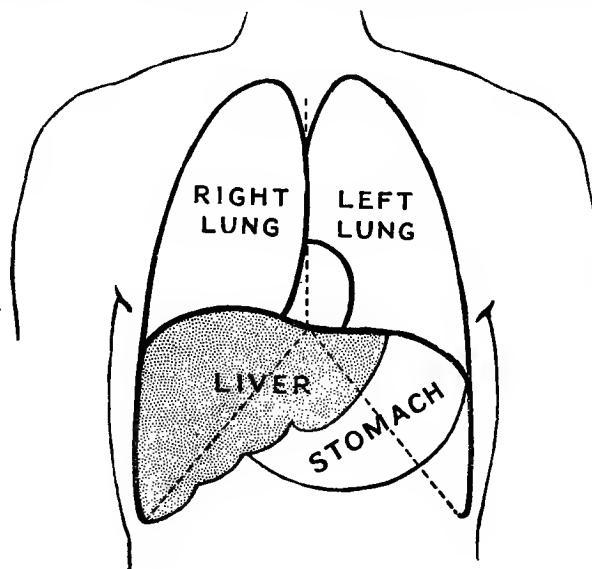


FIG. 30.—SHOWING HOW THE DIAPHRAGM IS SHAPED TO FIT THE LIVER.

The Abdominal Press must be made below the level of the lower end of the Ridges. The Spleen fills the unoccupied space on the left of the Stomach (between the Stomach and the Chest-wall).

The constriction of the abdomen should be made low enough to press upon the abdominal organs below the liver, so that the liver being thereby raised, it pushes up the floor of the chest—the diaphragm. The diaphragm being raised, the bases of the lungs are pressed upon, and thus the column of air in the vocal apparatus is pushed up from below. The liver, assisted by the stomach and spleen, so completely fills up the top of the abdomen that it may be made to act like a piston by the moving abdominal walls, any constriction of the lower abdomen making the piston rise and a relaxation allowing it to fall again.

This piston-like movement of the liver can be finely adjusted by the action of the abdominal muscles, and can be used to bring about any change however delicate in the compression of the column of air in the vocal apparatus.

By continuous and intelligent daily practice the abdominal movements can be so beautifully controlled by the will, that the same degree of delicacy of touch may be attained as in the bowing of the violin.

The violinist depends largely upon the refined manipulations of the bow for his effects; the subtle changes wrought by his artistic muscular contractions in bowing, make the instrument resound with such effective vibration that it seems to speak with real emotion, and the artistic perception of the violinist becomes evident.

The abdominal movements bear the same relationship to voice-use as bowing does to violin playing. The same mentally controlled movements are necessary to both, and need continual intelligent and persistent artistic practice.

Breathing Exercise IV. Important as is the bowing of the violin, the playing of the instrument is almost dependent upon the art of touch in fingering; voice too is dependent upon the sensation of tone in articulation.

The compression of the vocal column of air is not complete, until the placing of the voice is brought about by the control of the other muscles engaged in the production of voice; that is to say, of the muscles that are engaged in making the different shapes that are necessary for the production of the numerous sounds that make up a language, and of those engaged in keeping the voice in its proper relationship to those shapes. Thus the cultivation of vocal tone consists of the artistic balance of all the muscular vocal forces by mental control; the controlled energy begins at the bottom of the vocal apparatus and is completed at the top.

The abdominal movements supply the initial energy, and are engaged in action even before voice is made, for they are at work while the breath is being taken into the lungs to be converted by vibration into voice.

BREATHING EXERCISE IV.

Position.—Breathing position.

Breathe out —Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs—breathe-in through nose.

(2.) Hum a prolonged "M" sound—abdominal press while humming.

(3.) Abdominal release at end of sound.

(4.) Breathe-out through mouth any superfluous air.

Repeat movements 6 to 12 times.

Notes.—There are four distinct movements made in connection with every phrase, (i.) Breathing-in the amount of air necessary for the length of the phrase (the smallest quantity, not the largest quantity), the quantity varying with each phrase; (ii.) Abdominal press all the time the phrase is being sounded; (iii.) Quick abdominal release at the end of the phrase; (iv.) Rest before next phrase during which any unused air is quickly breathed-out. The fourth movement is purely physiological, and strictly speaking does not belong to "breathing for voice."

These breathing exercises are the fundamental exercises used in the teaching of singing in the elementary schools, and are described in the syllabus of graduated instruction in singing issued by the London County Council as follows:

Breathing Exercises applicable to all Departments.

The following breathing exercises are recommended by Dr. Hulbert for all children, from the ages of five years and upwards :

- (1.) Breathe-in a moderate breath through the nose, and breathe it out again through the open mouth.
- (2.) Breathe-in three short breaths through the nose, and breathe-out three short breaths through the open mouth.
- (3.) Contract the muscles of the abdomen, making its front wall move in (abdominal press); and relax the muscles, making the front wall return to its original position (abdominal release).

- (4.) Hum a prolonged "M" sound on a medium note, making use of a combined movement of exercises Nos. 1 and 3 as follows : (1.) Breathe-in through the nose ; (2.) Press abdomen in while humming ; (3.) Release abdominal press at end of sound ; (4.) Breathe-out through open mouth any superfluous air.

The co-ordination of the muscular movements of the different parts of the vocal apparatus is necessary for the production of the sensation of tone, and the "M" exercise performed properly is the simplest way of starting the delicate and complicated vocal co-ordinated exercises.

The control of breathing for voice is completed by the management of the articulatory apparatus. By breathing-out through the open mouth, movements of the articulatory apparatus are made more flexible, for the lower jaw is dropped about an inch, and it is raised again by its muscles so as to close the mouth while breathing-in.

If instead of opening the mouth to breathe-out, the mouth is kept shut and voice is made, the sound produced is the nasal vowel "M." In making this sound the different parts of the articulatory apparatus are practically in a position of rest. The lips are lightly closed ; the tongue is lying flat in the mouth, with the tip touching the back of the front teeth, and the upper surface on a level with the top of the lower teeth ; the soft palate and the muscles of the throat and cheek are in their normal position—there being no change from the position of rest beyond the change that is brought about by the requisite tension of the whole of the vocal apparatus whenever vocal tone is produced.

This position of rest should be used for the fundamental exercise of the articulatory apparatus for the following reasons : (1.) To prevent the use of undue effort in making the first voice sounds ; (2.) To teach the sensation of tone at the very outset ; (3.) To teach what is meant by the balance of forces in bringing about co-ordination of the movements of the chest-muscles and of the muscles that move the articulatory apparatus.

For this purpose it is advisable in doing the fourth voice exercise to place the first finger of the left hand flat upon the lower part of the face between the nose and the chin, so that its palmar surface lies in the groove of the upper lip, its tip touching the bottom of the nose and its base touching the most prominent part of the chin.

The right hand should be placed flat upon the abdomen, just below its middle line, so that it is below the lower border of the liver.

A medium-sized breath is taken in through the nose, making the ribs move out sideways as in the preceding breathing exercises, then, with the lips kept lightly closed and with the tip of the tongue lying against the back of the lower front teeth, the sound "M" is hummed to a note whose pitch is somewhere about the middle of the compass of the voice. While the humming sound is being made the ribs must be controlled in movement by putting on the abdominal press, and attention should be given to the directing of the vibration of the top of the vibrating column of air to the back of the upper lip. If the vibration can be easily felt in the front of the mouth it must follow that the tongue is not unduly raised at the back, otherwise the air could not get into the mouth. Thus by feeling the tip of the tongue behind the teeth and the vibrating air at the back of the upper lip, the tongue is made to take up its proper flat position for the "M" sound.

The finger placed upon the lips draws the attention of the student to directing the voice to the front of the mouth, while the hand upon the abdomen is a guide to the abdominal movement. The two hands used together are a great help in getting the proper co-ordinated movement of the abdominal and articulatory muscles. The articulatory muscles being in a position of rest, the main attention can be given to the amount of abdominal press that should be used to obtain the sensation of vocal tone in the front of the mouth, and to the kind of abdominal press that promotes a firm and full sensation. Anything approaching undue abdominal effort hampers and hinders vocal tone (stress, strain, muscularity or rigidity must be carefully avoided) ; an artistic movement similar to that used in the bowing of the violin produces a full sensation of tone provided the whole of the walls of the vocal apparatus are kept in the proper condition of tension.

The sensation of tone is the most valuable asset in the cultivation of vocal tone for either singing or speaking, as it is a physical sensation and does not in any way interfere with the mental processes that are used in vocal expression.

Control is gained over the back of the tongue by mentally directing the voice to the front of the mouth until the sensation of tone appears to be felt by the finger upon the lips ; and if the tip of the tongue is placed at the same time against the back of the lower front teeth, the tongue as a whole is controlled.

The control of the tongue is one of the greatest difficulties that arises in voice-training, and any voice exercise that can be used for this purpose is most useful.

BREATHING EXERCISE V.—ONE-SIDED BREATHING.

Special Exercises for Localising Breathing.

Position.—Breathing position : Trunk bent to one side.

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

Repeat movements six times on each side.

Notes.—By well bending the trunk to the side and making as much bend as possible between the shoulder joints and the hips, the lung becomes cramped on the bent side. The breathing being hampered on the bent side is consequently much freer on the other side. It is useful for cases in which it is necessary for the equalisation of breathing to get more freedom on one side than the other, as when one side of the chest is not so elastic as the other side. Perform the ordinary breathing exercise with the body bent over to the good side. Still greater effect can be obtained by concentrating the attention upon the movement of the weak side.

BREATHING EXERCISE VI.—BREATHING AT THE BACK.

Position.—Breathing position.

Backs of knuckles of both hands placed on back just above the waist,
one hand on each side of the spine on the ribs.

Trunk bent forwards.

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

Repeat movements six to twelve times.

Notes.—By bending the trunk forwards, the mounds made by the ribs as they curve backwards just after leaving the spine are rendered more prominent; these mounds are full of lung, and it is very important to get this part in good working order.

BREATHING EXERCISE VII.—IN THE LYING POSITION.

Breathing Exercises for Beginners.

Position.—Breathing position : Lie perfectly flat upon a table, couch, or bed, with nothing under the head except perhaps a very shallow pillow.

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs—breathe-in through the nose.

(2.) Swing in the ribs—breathe-out through the mouth.

Repeat movements from six to twelve times.

Note.—By lying perfectly flat, the body is necessarily kept in a good position, so that it is well to practise breathing in this position, until the poises have been thoroughly mastered. The shoulders should not be raised, AND THE ABDOMEN MUST NOT BE PROTRUDED.

BREATHING EXERCISE VIII.—IN THE SITTING POSITION.

Position.—Sit in an ordinary chair and cross one leg over the other; bend the body forward until the abdomen rests firmly upon the thigh of the leg that is uppermost; grasp the front of the lower leg by interlacing the fingers and holding it just below the knee.

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs; breathe-in through the nose.
 (2.) Swing in the ribs; breathe-out through the mouth.
 Repeat movements from six to twelve times.

Notes.—Protrusive abdominal breathing is prevented by the fixation of the front abdominal-wall against the thigh of the upper leg. Collar-bone breathing is prevented by the fixation of the shoulders through the grasping of the lower leg. The only breathing possible is the LATERAL COSTAL BREATHING. By this exercise, therefore, the pupil can be made fully to realise what is meant by lateral costal breathing. Another point becomes very evident: there is a great expansion of the chest at the back, where there is an increased space by reason of the backward projection of the ribs. It is most important that this space should be utilised in breathing.

BREATHING EXERCISE IX.—IN THE STANDING POSITION.

Position.—Breathing position: Arms forward stretched for (a).
 Arms downward stretched for (b).

Breathe-out.—Breathe-out by swinging ribs inwards.

Movements.—(a) (1.) Part the arms sideways.
 (2.) Return to arms forward raised position.
 (b) (1.) Raise the arms sideways.
 (2.) Lower the arms.
 Repeat movements six to twelve times each.

Notes.—Accompanying movement (1) the ribs should swing out sideways and breath should be taken in through the nose; accompanying movement (2) the ribs should swing inwards and breath should be breathed out through the mouth. The movements of the arms and the ribs must be perfectly rhythmical. In arms parting the hands should be kept on a level with the shoulders, and there should be no reach forward of the shoulder girdle. The arms must not be carried back further than the shoulder joints. In arms raising sideways, the arms must not be carried higher than the shoulder joints.

BREATHING EXERCISE X.—IN GAMES.

Games and play are excellent breathing exercises. There is great scope for trainers who care to pay regard to the improvement of breathing in games and athletics. The application of the principles of artistic breathing to athleticism would materially affect the records: a football team trained to breathe artistically would become far more formidable, and the same could be said about the effect of artistic breathing upon rowing.

If ordinary breathing is taught by playing games, it can be arranged: (1.) That all are engaged in the game, and so that all are breathing; (2.) That some are playing and are breathing actively, while others are resting; (3.) Artistic breathing exercises can be used alternately with games.

Any kind of exercise is a breathing exercise; it is a grievous fault to hold the breath while doing anything. Holding the breath is the first step towards making undue effort.

CHAPTER IX.

THE ARTICULATORY APPARATUS.

The Articulatory Apparatus.

The object of the following description of the Articulatory Apparatus is to simplify it as much as possible. The theory of voice-production demands a careful study of the posterior part of the apparatus, which is very complicated, very difficult to understand, and does its work by means of involuntary muscles. The practice of voice-production is fortunately almost entirely confined to the anterior part of the apparatus, whose work is done by voluntary muscles, which not only can be directly controlled by the will, but they also indirectly control the involuntary muscles situated at the back and responsible for the movements of the posterior part of the apparatus.

In a practical treatise it will be well to dwell upon the theory of direct control, leaving the thorny discussions of the indirect control, interesting as they may be, severely alone, fully realising the fact that the indirect control will be efficient if the direct control is properly mastered by the science and art underlying the laws of movement.

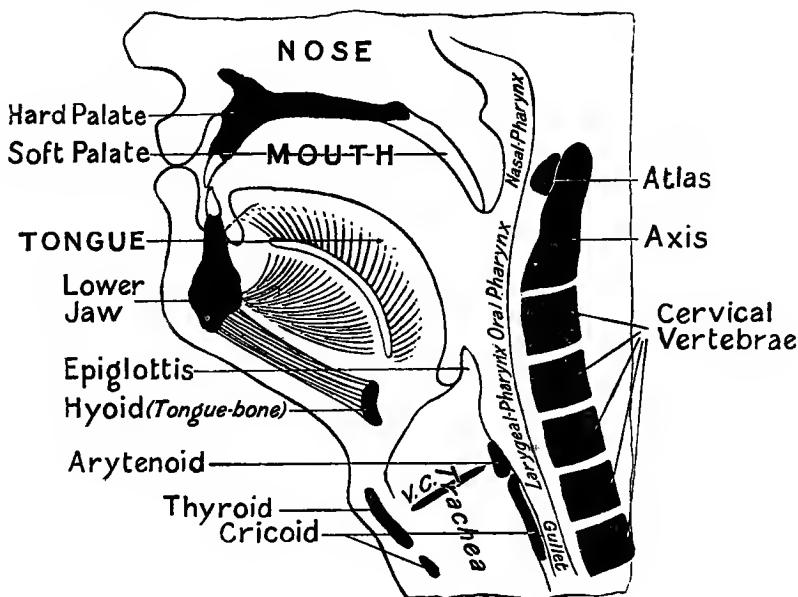


FIG. 31.—THE ARTICULATORY APPARATUS.

A section of the lower part of the face and of the upper part of the neck, showing the relationship of the different parts of the Articulatory Apparatus (the nose, the mouth, and the pharynx) to one another, and to the bones of the spine at the back, and to the Larynx at the top of the Trachea below.

The Palate. The Palate divides the articulatory apparatus into three cavities, the nose above, the mouth below, and the pharynx at the back; it is a somewhat curved partition and consists of two parts. The front part, about three inches in length, is hard, bony, and immovable; it forms the floor of the nose and the roof of the mouth. The back part, about an inch long, is soft, muscular; and movable; it forms the front wall of the pharynx. The movable soft palate plays a very important part in articulation, and must be well exercised.

The immovable nose, influenced only by the changes in shape of the nose pharynx, is the part of the articulatory apparatus that is used most in resonance ; the movable mouth (besides being a resonating cavity, though not so good as the nose) is mostly employed in shaping for the vowels and in articulating for the consonants. The wide open pharynx keeps the communications between the nose, mouth, and lungs intact, unless either the nose or mouth cavity is closed by movement of the soft palate and tongue for any definite purpose (as, for instance, in breathing-in through the nose and -out through the mouth). In breathing-in the air goes direct from the nose through the pharynx into the lungs, and the soft palate is lowered to meet the raised root of the tongue ; in breathing-out the air goes direct from the lungs through the pharynx into the mouth, and the soft palate is raised to close the nose pharynx.

The Pharynx is a muscular tube about four inches and a-half long and

The Pharynx. about an inch in diameter when fully open : the upper inch and a-half may be said to belong to the nose, the middle inch and a-half to the mouth, and the lower inch and a-half to the larynx. Its muscles constrict the tube, and by their action enable the swallowing of food to take place. The pharynx possesses seven openings (two opening into the nose, two into the middle ear, one into the mouth, one into the larynx, and one into the gullet).

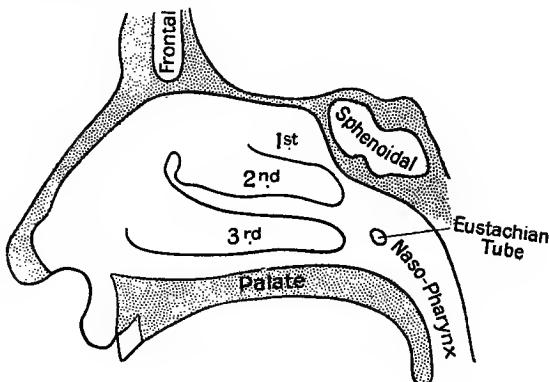


FIG. 32.—THE NOSE AND NASO-PHARYNX.

The 1st, 2nd, and 3rd Turbinated Bones are situated one above the other on the outer wall of the Nose. The large Frontal and Sphenoidal Spaces open into the Nose. The Eustachian Tube leads from the Naso-Pharynx to the Middle Ear.

Adenoids make their appearance in the nose-pharynx, and either partially or completely block up the entrance to the back of the nose according to their size and quantity. Through the pharynx air passes from the nose or mouth into the larynx, wind pipe, and lungs, and air from the lungs passes through the pharynx into the nose or mouth. The eustachian tube leading into the middle ear begins in the nose pharynx.

The tonsils are placed one on each side of the mouth pharynx.

The shape of the nose and mouth pharynx is affected by the movements of the soft palate ; the shape of the mouth pharynx is also affected by the movement of the root of the tongue. The pharyngeal muscles, being involuntary as far as voice is concerned, do not interest voice-users, and therefore can be ignored in practice. The practical conclusion that can be arrived at, as far as the pharynx is concerned, is that it must be kept as wide open as the exigencies of the occasion allow, and must be quite mobile. It is kept wider open for the lower than for the higher notes.

The Nose. The nose is a hollow cavity surrounded by hollow cavities (the skull above, the mouth below, the hollow upper jaws on each side, and the pharynx at the back); it has definite openings leading into cavities called accessory cavities (one above each eye in the frontal bones called frontal cavities, one

on each side of the eyes in the ethmoid bones called ethmoidal cavities, one on each side of the upper jaw called maxillary cavities, and one between it and the brain in the sphenoid bone called the sphenoid cavity). Inasmuch as these cavities are surrounded by thin bone, any amount of vibration of their walls can take place, in addition to and in consonance with, the vibration of the air contained in these accessory spaces.

The nasal cavity itself is triangular in shape, and is divided into two equal parts by the nasal septum. It has two openings at the back leading into the pharynx, corresponding to but larger than the two openings at the front; it is two inches high, and at the base of the triangle three inches long and about one inch wide. This space is diminished by the three scroll-shaped bones called the turbinated bones, placed one above the other on the outer walls of the nose, as well as by the septum in the centre. The walls of the nose, consisting of bones and cartilage without joints, are fixed, and so its shape and size cannot be altered except indirectly through the alteration of the shape of the nose pharynx.

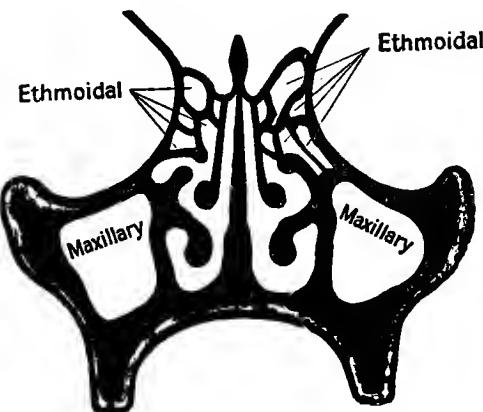


FIG. 33.—THE INTERIOR OF THE NOSE.

A view from the back, showing (1) the Septum dividing the nose into a right half and into a left half, (2) the three Turbinated Bones attached to the outer walls of each half of the Nose, (3) the very large Maxillary spaces in the right and left Upper Jaw Bone, (4) the many Ethmoidal spaces between the Nose and the Orbita. The Maxillary and Ethmoidal spaces open into the Nose. Above the triangular space forming the Nose is the Skull containing the Brain, below is the Mouth. Between the Nose and the Mouth is the Hard Palate.

The Mouth. The mouth is another large hollow space, partially filled by the large mobile muscular organ the tongue, forming with the lower jaw the floor of the cavity; its side walls, the cheeks, end in the lips in front consisting of muscles that also are movable. The movements of the lower jaw allow the mouth to be opened widely or partially, or closed tightly or partially, at will; and also allow of a rocking movement from side to side for the grinding down of the food in eating. The hard palate forms the roof of the mouth separating it from the nose; the soft palate forms its back boundary, separating it from the pharynx. The upper jaw and the hard palate are fixed and immovable.

Exercises for the movement of the lower jaw, the tongue, the lips, and the soft palate, which affect the size and shape of the mouth, must be regularly practised.

Exercises for the Soft Palate.

- Exercise (1.)* With the mouth shaped for the vowel "ah," breathe-in through the nose (soft palate lowered) and breathe-out through the mouth (soft palate raised).
- Exercise (2.)* With the mouth shaped for the vowel "ah," make the sound "ng" (soft palate lowered) followed by the sound "ah" (soft palate raised).

Exercise (3.) With the mouth shaped for the vowel "ah" make the sound "ng," followed by the sound "kah," being careful to get a clean break of the articulation.

Exercise (4.) With the mouth shaped for the vowel "ah" make the sound "ng," followed by the sound "gah."

Notes.—The root of the tongue is being exercised in these movements, as well as the soft palate, the root of the tongue being raised when the soft palate is lowered and *vice versa*. In shaping for the "ah" sound and throughout the exercises be careful to keep the tip of the tongue lightly pressing upon the back of the lower front teeth; and also keep the top of the tongue level with the top of the lower teeth front and back when the root of the tongue is lowered.

Exercises for the Tongue.

In breathing-out with the mouth shaped for "ah" always stand in front of a mirror; make the top of the tongue keep on a level with the top of the lower teeth back and front, and let the tip lightly rest against the back of the lower front teeth. Keeping the tongue thus flat in the mouth is the most valuable tongue-exercise there is from a voice point of view. Remember that flat in the mouth does not mean that the top of the tongue is depressed lower than the top of the teeth at any part along its whole length; this can only be effected by a muscular contraction that will make the tongue stiff, which is most undesirable in voice-training (see also Notes and Exercises for the Soft Palate).

Exercise (1.) Make and break quickly and neatly the various articulations in which the tongue comes into play by whispering in turn :

th, th, th, th.
t, t, t, t.
s, s, s, s.
sh, sh, sh, sh.
tch, tch, tch, tch.
l, l, l, l.
r, r, r, r.

Notes.—In breaking the articulation, which of course must be definitely and carefully made, take care that the tip of the tongue moves quickly and lightly, and that the tendency to let the air escape rapidly is overcome by controlling the breath so that it flows out instead of being forced out.

Exercise (2.) Precede each of the articulations with a vowel sound, and sing and then speak each in turn, carefully attending to the voiced part of the consonant in each exercise.

ooth, ooth, ooth, ooth.
ohd, ohd, ohd, ohd.
awz, awz, awz, awz.
ahzh, ahzh, ahzh, ahzh.
ayj, ayj, ayj, ayj.
eel, eel, eel, eel.
uhr, uhr, uhr, uhr.

Note.—Repeat, changing the combinations of vowels and consonants.

Exercises for the Lower Jaw.

Exercise (1.) Breathe-in through the nose (mouth closed), breathe-out through the wide-open mouth (shaped as for "ah"). Let the lower jaw fall by its own weight instead of forcing it down (see also Notes and Exercises for the Tongue and Soft Palate).

Exercise (2.) Close the mouth firmly but lightly.

- (1.) Open for "oo," shaping silently before a mirror.
- (2.) Open for "oh" " " "
- (3.) Open for "aw" " " "
- (4.) Open for "ah" " " "
- (5.) Open for "ay" " " "
- (6.) Open for "ee" " " "
- (7.) Open for "ow" " " "
- (8.) Open for "I" " " "
- (9.) Open for "oi" " " "
- (10.) Open for "U" " " "

Exercise (3.) Say the word "arm" several times slowly, and then more quickly. Be careful not to make any sound after "m": that is, do not add a kind of "uh" sound. While the lips are lightly pressed together no other sound but "m" can be made, but a sound made after the lips are parted will resemble "uh." This is a very common but very bad fault both in singing and speaking.

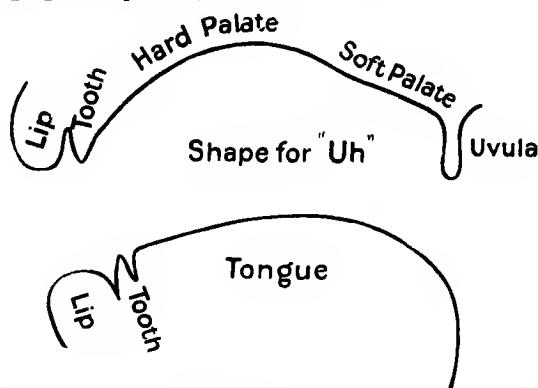


FIG. 34.—SIDE VIEW OF THE ARTICULATORY APPARATUS. THE TONGUE, THE SOFT PALATE, THE LIPS, AND THE LOWER JAW IN THE POSITION OF REST.

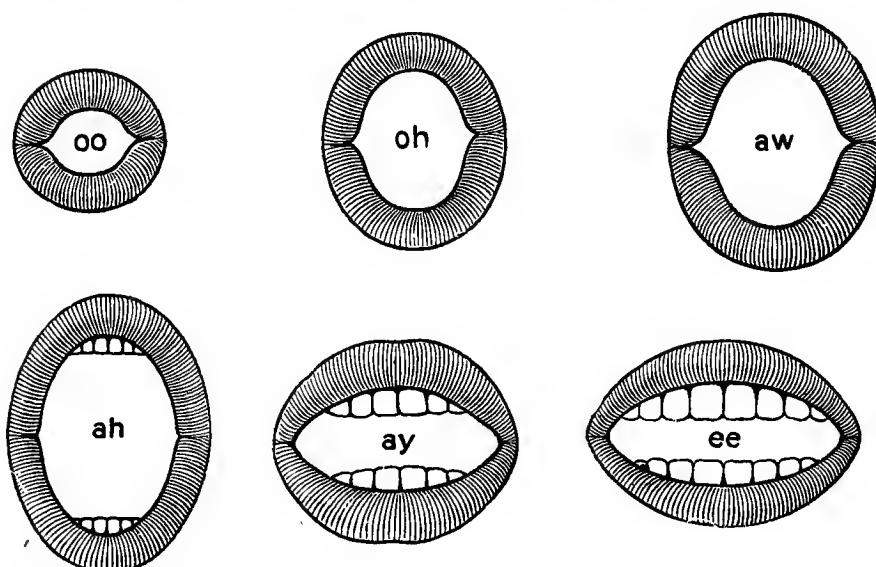


FIG. 35.—SHAPES FOR THE VOWEL SOUNDS. (VIEW FROM THE FRONT.)

Exercises for the Lips.

Exercise (1.) Using a mirror, shape silently but carefully for each of the vowel and diphthong sounds (oo, oh, aw, ah, ay, ee, ou, I, oi, U).

Exercise (2.) Prefix the labials p, b, f, v, and the nasal vowel sound m in turn to the vowel and diphthong sounds, and repeat each syllable aloud (poo, boh, faw, vah, may, &c.).

Exercise (3.) Place the labials and m sound at the end of the vowels and repeat each syllable aloud (oop, ohb, awf, ahv, aym, &c.).

Exercise (4.) Sing the vowel and diphthong sounds in turn on each semitone of a scale, breathing through the nose and using the abdominal press. After singing each sound, say loudly a word made up of the vowel sound with "m" in front and "n" at the end (moon, moan, mawn, mahñ, main, mean, &c.).

Notes.—See note after the Exercise on the word "arm."

Exercise (5.) Sing a scale on the vowel and diphthong sounds in turn.

CHAPTER X.

THE LARYNX.

The Larynx.

The Larynx (voice-box) is situated at the top of the Trachea (wind-pipe); it consists of cartilages—the Thyroid (shield), the Cricoid (ring), the Arytenoids (pyramids). The Cricoid, the second cartilaginous ring of the Trachea—shaped like a signet ring with the signet at the back and the ring part in front—forms the foundation of the Larynx. The ring can easily be felt standing out prominently in the middle of the front of the neck just above the back of the collar stud; below it is the third cartilaginous ring of the Trachea; above it, separated by a small space in front, is the

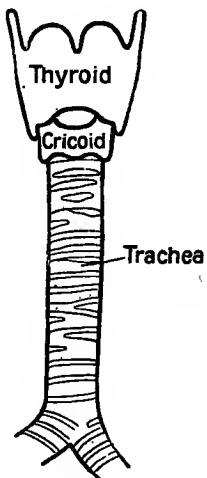


FIG. 36.—FRONT OF LARYNX.

The Thyroid acts as a shield in front and at the sides to the Vocal Cords and the Arytenoids. At the sides of the bottom part of the Thyroid is a joint between the Thyroid and the Cricoid at which the cartilages move when the Crico-Thyroid muscle contracts. This movement stretches the Vocal Cords, which are attached to the middle of the back of the Thyroid in front and to the front of the Arytenoids at the back.

The Cricoid forms a complete ring around the Trachea, which is narrow in front and wide at the back. The other cartilaginous rings of the Trachea are incomplete behind.

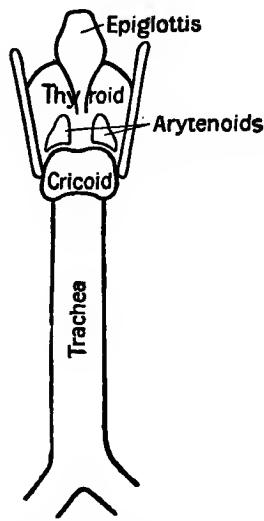


FIG. 37.—BACK OF LARYNX.

The Arytenoids, shaped like pyramids, are seated upon the widened part of the Cricoid at the back. Between each Arytenoid and the Cricoid is a joint upon which the Arytenoids rotate and slide when the Crico-Arytenoid muscles contract. By rotation and sliding inwards of the Arytenoids the Vocal Cords are approximated for vocal purposes; by rotation and sliding outwards the Vocal Cords are separated for breathing purposes. The Thyroid Cartilage does not form a ring around the Trachea; its posterior borders end at the sides, leaving the back part open. The Epiglottis forms a lid to protect the Larynx and Trachea from the entrance of foreign bodies such as particles of food, &c.

first cartilaginous ring of the Trachea, the Thyroid. The signet part at the back supports the two Arytenoids. The Thyroid can distinctly be felt as another prominence known popularly as Adam's apple, with its well-marked notch at the top. A little below this notch the two vocal cords are attached in front to the inside of the Thyroid, one on each side of the middle line, and pass backwards to be attached behind to the front of one or other of the Arytenoids.

The vocal cords consist of muscles and elastic fibres covered by mucous membrane ; the one is quite separate from the other. The two vocal cords can be drawn towards each other (approximated) or separated widely apart, but there is no conscious sensation attending these movements, and consequently no movement-feeling guiding sensation, for the cords have a poor nerve supply and the muscles that move them are involuntary muscles.

The Closing the Cords in effort. We cannot will the cords to close or open, but we can make up our minds to breathe-in freely, which we know will cause the cords to move outwards until they are as far apart as possible in order to allow plenty of space for the ingoing air ; or we can make up our minds to hold our breath, which we know will make the cords move inwards towards one another until they meet in the middle line, completely closing the upper end of the wind-pipe and so preventing any

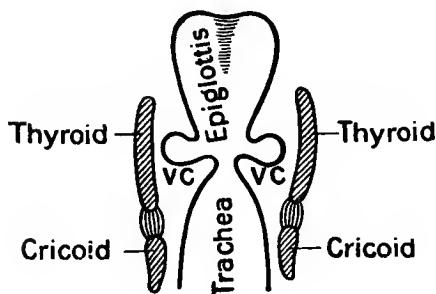


FIG. 38.—SECTION THROUGH THE MIDDLE OF THE LARYNX FROM SIDE TO SIDE.

The Crico-Thyroid muscle is seen attached to the Thyroid above and to the Cricoid below. Above the Vocal Cords (V C) is a space on each side called the Ventricle of Morgagni, which contains numerous glands for the secretion of a fluid to moisten the Vocal Cords. Above this space are the False Vocal Cords, and above this again the Epiglottis. The section of the Vocal Cords shows them to be triangular in shape. They consist of the fibres of the Thyo-Arytenoid muscle, of some elastic fibres, and are covered by mucous membrane. The Trachea is narrowed at the top by the Vocal Cords, which can be approximated for vocalisation or separated for breathing.

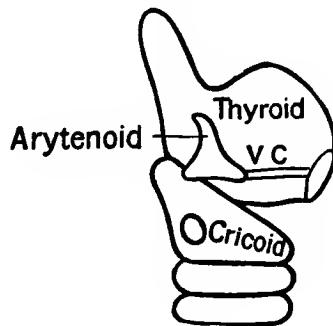


FIG. 39.—INSIDE OF LARYNX : THE RIGHT HALF OF THE THYROID HAS BEEN REMOVED.

The Right Vocal Cord is shown attached to the back of the Thyroid in front and to the front angle of the Right Arytenoid at the back. The joint between the Right side of the Cricoid and the Right wing of the Thyroid (which has been removed) is well marked in the diagram, and shows how the Cartilages can be raised or lowered upon one another at this joint, causing a stretching and so a lengthening of the Vocal Cords. The joint for the rotation and sliding of the Arytenoid upon the Cricoid exists where the Arytenoid joins the Cricoid. The Cricoid is narrow in front and wide behind, being shaped like a signet ring.

escape of air from within outwards. This double action always takes place in the making of effort. Air is drawn freely into the lungs by a liberal expansion of the chest, and is imprisoned, while the muscles are contracting forcibly for the purpose of the effort, using the expanded chest as a purchase from which to work. At the end of the effort, the imprisoned air is suddenly released by the vocal cords flying apart with a bang, hence the jerk that always accompanies undue effort. We can also make up our minds to make a sound quietly (such as the neutral vowel sound "uh"); we take in a small quantity of air, the cords separate a little, then for vocal purposes they approximate one another until they nearly touch (they are quite parallel the one to the other, and there remains a very small chink through which the escaping air can flow). The air escaping through the small space between the cords (the space whether small or large is called the glottis) causes the cords to vibrate and sound is made. That sound is "uh" if the articulatory apparatus is in a condition of rest.

Thoroughly to understand this, practise the following exercise. Light a cigarette, breathe through the nose a moderate amount of air, at the same time filling the mouth with cigarette smoke. Hold the breath, shape the mouth as if to pronounce "oo" or "oh," then suddenly let the cords separate, allowing enough breath to escape to propel a ring of smoke through the shaped lips. The "uh" sound will be distinctly heard each time the cords separate. From this exercise will be learned: (1) that the cords by vibrating make very little sound, (2) that the



FIG. 40.—THE VOCAL CORDS WIDELY SEPARATED.
Breathing-in a large quantity of air.

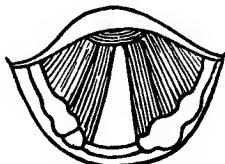


FIG. 41.—THE VOCAL CORDS MODERATELY SEPARATED.
Breathing-in a moderate quantity of air.

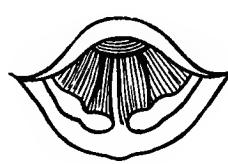


FIG. 42.—THE VOCAL CORDS APPROXIMATED.
Making Voice.

sudden break of the obstruction set up by the tightly closed cords can be distinctly felt in the larynx. This feeling is one of strain that accompanies effort, quite distinct from the movement-feeling sense. It has over and over again misled enthusiasts who have courted it, believing it to be advantageous in their mistaken idea that the feeling of effort is the same as the movement-feeling sense. The shock of the glottis (that is, tightly closing the cords to keep back the air by what is termed holding the breath, and then suddenly parting them to allow the escape of a certain quantity of the imprisoned air) is quite the worst fault in the production of voice, and has the most damaging effect upon the delicate structure of the cords themselves, while making the resulting sound very hard and unmusical.

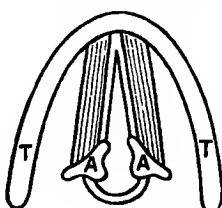


FIG. 43.—THE ARYTENOIDS.

Showing the Vocal Cords attached to their front processes. The muscle forming part of the Cords is the Thyo-Arytenoid Muscle, the vocal muscle which produces the fine and delicate gradations of tone. At the back of the Arytenoids is the Arytenoid muscle, which approximates the Arytenoids. (A) Arytenoid. (T) Thyroid.

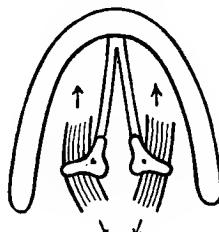


FIG. 44.—THE ARYTENOID.

The dots in the centre represent the pivots around which the Arytenoids rotate by their muscles. The muscle in front (the Lateral Crico-Arytenoid) pulls the outer process forward, and so approximates the Vocal Cords. The muscle at the back (the Posterior Crico-Arytenoid) pulls the outer process backwards and so separates the Vocal Cords.

Shock of the Glottis.

Shock of the glottis is a perfect example of antagonism (as opposed to co-ordination) in movement, an ill-regulated intake of breath being followed by a crude, clumsy closing of the cords, which are jerkily forced asunder by the bursting forth of the badly controlled outgoing

air, and a sharp, noisy, penetrating, and metallic sound is the resultant of all this blustering and mismanaged effort. Contrast this with a well-regulated intake of breath, followed by the artistic approximation (not closing) of the vocal cords, whose rhythmical vibrations set up by

the artistically-controlled outgoing air emit musical sound. In the latter case the vocal cords are strengthened by their work, in the former case the fibres of the cords have in some instances been actually broken and even their blood-vessels ruptured. Unfortunately great kudos has been gained by voice-trainers who definitely teach shock of the glottis. It is the quickest, easiest, and surest method of getting a noisy result from a weak and flabby vocal apparatus—that is to say, of getting the blatant sound belonging to the use of crude force—that cannot strictly be called music but is apparently musical enough to satisfy the uncultured ears of the inartistic. The phonetician who insists upon over-accentuation of articulation by preaching the doctrine of explosives necessarily suffers from want of music in his voice. The teachers of antagonistic physical movements, by their jerky method of delivering their commands possess voices which are still more unmusical. School teachers, in their endeavours to keep order, often lose their voice from the forceful shocks that they give to their glottis as the situation becomes more and more desperate.

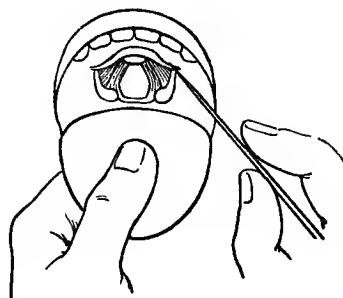


FIG. 45.—THE LARYNGOSCOPE.

The mirror is placed under the soft palate at the back of the mouth, which is pushed upwards, the head is thrown well back, and the tongue is pulled well forward by the thumb and finger of the examiner.

Baneful Effects of "Shock of the Glottis." The vocal cords may be able to withstand these crude shocks for a time, but inevitably, under the ordeal of continued work, they give way to the repeated strain—from a musical point of view this might perhaps be regarded as a good thing!—and the hard working but unmusical voice-user has to take an enforced rest. In many cases such misuse results in the throat becoming more and more irritable and more and more susceptible to cold.

There is still another important point in connection with the shock of the glottis, its correction or cure is effected by preserving the tonicity of the vocal apparatus during vocalisation. If the walls of the vocal apparatus are kept in their proper condition of tonicity and the air inside the vocal apparatus in its proper state of compression, by making proper use of the sensation of tone, there cannot be shock of the glottis, for the air on each side of the vocal cords being duly compressed by its artistic control, there is very nearly an equal pressure on either side and consequently there cannot be any strain. Hence there is a distinct hygienic vocal gain in the energy-conserving policy of tonicity.

Any feeling in the larynx, due to the sensation of effort, means that the vocal production is so faulty that sooner or later the voice must break down with work, besides suffering from loss of tone in the meantime.

Use of the Laryngoscope. As to the use of the laryngoscope in voice-training, it may be quite interesting to see (1) the movements of the cords outwards when breathing-in, (2) the movements of the cords inwards when holding the breath, (3) the approximation of the cords when making a sound (which is about all there is of any practical voice use in laryngoscopy), but it must be remembered that even this is seen with the vocal apparatus in a very uncomfortable position.

The head is raised and the tongue is pulled well forward so that the epiglottis (the lid of the glottis), which is attached to the root of the tongue, may be well lifted, while the soft palate is pushed up by the small mirror placed in the upper part of the back of the mouth, otherwise no view could be obtained of the inside of the larynx. The laryngoscope is invaluable to throat specialists for the detection of affections, abnormalities, and diseased conditions of the throat, but is really of no practical value to the voice-user. Can we tell anything about the quality of the vibration of a violin string by looking at it while it is vibrating? Anyone can see the strings of an instrument vibrate much more easily than the most expert laryngoscopist can see the vibration of the vocal cords.

**Voice due to
Vibration of Air
in Vocal
Apparatus.** Voice is no more the mere result of the vibration of the vocal cords, than is the sound emanating from the violin the mere result of the vibrations of its strings. Violinists do not pay a very high price for violin strings, but they pay fabulous prices for a well-seasoned and well-made violin, thus proving that the quality of the vibrations depends mostly upon the vibrations of the body and of the

air in its cavities, which are added to or in sympathy with the vibrations originating in the strings. The human voice consists of the vibrations of all the air in the vocal apparatus. The vocal cords originate the vibrations by the action of involuntary muscles, which can only be indirectly controlled by the direct control of the voluntary muscles of the breathing and articulatory apparatus, and these we have already noted correspond to the bowing and fingering of violin playing. Voice-users who pay the requisite attention to the control of their breathing and articulatory forces need not worry themselves at all about the debatable points raised by the advocates of the false vocal cord or of the shock of the glottis theories, or of any other wild problems that from time to time are advanced by enthusiasts whose physiological knowledge is inadequate to quench the fire of their vivid imagination.

CHAPTER XI.

HYGIENE FOR VOICE USERS AND ORDINARY HEALTH EXERCISES.

“War destroys man, but luxury mankind
At once corrupts—the body and the mind.”

Crown.

The rules and regulations that should be observed in general hygiene can be summed up in the one word “temperance,” used in its widest sense “temperance in all things.” Temperance in work, rest, and play, temperance in eating and drinking, temperance in clothing, wraps and footwear, temperance in housing, bathing and ventilation, and even temperance in hygiene (strict hygiene is not in harmony with Christmastide). Cleanliness, including perfect sanitation, is so obviously necessary that it need only be mentioned in a work of this character which is devoted mainly to that part of hygiene that can be particularly applied to voice-users.

Voice-user's Throat.

The greatest voice-users are teachers. In the elementary schools the average time actually spent in voice use amounts to as much as three hours a day for five days in the week; that is to say, a teacher's voice has to be used actively for fifteen hours a week throughout the school term, besides any extra work done out of school hours. Actors, clergymen, and public speakers generally do not use their voices half so much as teachers, and yet clergymen are said to suffer more than any other class from an affection of the throat commonly called “clergyman's sore throat”; it would be better to call the affection “voice-user's throat,” as it is only too common to all voice users, and is the cause of an endless amount of discomfort and anxiety. Sometimes it is called pharyngitis, granular pharyngitis, tonsillitis, laryngitis, sore throat, or even hoarseness, but whatever name is given to it, it remains the same affection, “the voice-user's throat,” due to faulty voice-production.

The Arch-Enemy Noise.

It is usual to blame the sanitary arrangements and to rave about poor ventilation, but the greatest evil that has to be contended with when dealing with an audience is—noise. Not only has noise to be overcome by increased vocal effort, but it is also so directly opposed to “attention” that still more voice strain becomes necessary. Rooms whose windows when opened let in more noise, have to be ventilated, but why choose times for that ventilation when voice is being used! Surely arrangements can be made to stop the work at stated intervals to fling the doors and windows wide open and thus thoroughly ventilate the room by making a through draught. This will cause the greatest possible movement of the air in the room, which is the essence of ventilation; it may not be the most comfortable method, but it is the best and in the end saves time and loss of voice. While the air is being thoroughly disturbed, the occupants of the room can indulge in physical exercises of various kinds, which will revive their drooping interest and resuscitate their waning attention. It is quite possible to have very poor ventilation in a room with the windows open wide enough to let in the maximum of noise, but poor ventilation is impossible when the voice-saving drastic method is pursued as has been suggested.

Physiological Congestion of Throat.

It must always be remembered that voice-use causes physiological congestion in the small blood-vessels of the vocal apparatus: misuse of voice changes this physiological into a pathological condition. This is probably the most frequent cause of “voice-user's throat.” Hygiene suggests that after voice use the vocal organs should be specially protected by a woollen wrap during inclement weather. It is absolute folly to indulge in

animated conversation on the way home after a hard day's voice work, and the best way to avoid the temptation is to cover the mouth with the protecting wrap. The voice-user's wrap temperately employed does not amount to "coddling," which in turn is responsible for much throat trouble. The practice of always wrapping up the throat is nearly as bad as always neglecting to do so; weather conditions must be the deciding factor. Make a point, too, of getting as much fresh air as possible after leaving a crowded room. There are very few occasions when the inside is safer than the outside of a 'bus if suitably apparelled; a walk is much better still.

Clothing and Foot Wear.

The vagaries of our climate, the sudden changes of temperature and moisture, make it difficult to say what kind of clothing should be worn. Clothing should be light, loose, and warm; wool is supposed to possess these qualities. Woollen garments as underclothing, reaching from the neck to the nether joints—thick in winter and thin in summer—are therefore indicated, and should be of such a quality as to keep the body both warm and dry. All outdoor clothing should always be taken off in a warm room. It is perhaps more important to keep the body dry than it is to keep it warm, and therefore mackintoshes and goloshes, though often condemned by hygienists, are most useful if properly used. The fashion of having the boots soled with a rubber sole outside the leather sole is excellent, especially if it be put on when the boots are new and renewed before the leather sole is at all worn. A pavement in wet weather is nothing more nor less than a very shallow lake; the extra rubber sole keeps the boot just clear of the water, and the rubber itself is impervious to damp. Voice-users cannot be too careful about the condition of their walking boots, and also should pay due regard to their indoor shoes; these too should keep the feet warm and dry. It is quite a good plan to change the boots when staying indoors for any length of time.

Alcohol and Voice-Use.

Coddling the throat, imbibing alcohol and strong, hot tea, cigarette smoking, eating highly spiced foods, and treating the throat with lozenges, gargles, and other drugs are very bad habits for voice-users.

Strict moderation in indulgence in any of these luxuries will doubtless be harmless if the time and place are sufficiently carefully selected: do not do so either immediately before or immediately after voice-use. Various kinds of alcoholic drinks are recommended for voice, more especially stout and port wine; many ballad singers will tell you that they always reckon to have a small bottle of Guinness or a glass of port wine for every ballad that they sing. By this rule how much port or stout would be necessary for a lecture lasting an hour? Some artists rely upon hot beef tea or bovril as a vocal sustenance, others upon rum and milk, whiskey and soda, gin and bitters, and eucalyptus and menthol; it is quite a mistaken idea. Let bovril and whiskey be used for other purposes; they are not panaceas for the voice! Too much cigarette smoking injures the pharynx, mainly by the heat playing upon the back of the mouth. This can be prevented somewhat by using a cigarette holder, but better still by smoking a pipe, and best of all by strict moderation. What is done occasionally does not much matter, it is the habit that counts—going into a stuffy room does not hurt, it is the getting used to stuffiness that causes mischief.

"How use doth breed a habit in a man!"

Voice-training prevents Voice-user's Throat.

The most important hygienic measure for voice-users to adopt is to have the voice trained to do its work in the easiest and most convincing way. Voices properly trained are so strengthened that they can successfully get through an enormous amount of hard work; "tone in voice" eases the delivery and gives health to the apparatus. The voice is always ready for work, and needs no artificial stimulation, its physiological congestion does not become pathological (provided ordinary reasonable care is taken after voice-use). Health and tone are certainly synonymous terms in vocal hygiene. The vocal

apparatus moved by artistic movements does not tire easily, does not become worn out, and is not liable to inflammation. If by any chance the surroundings are unpropitious and cause inflammation of the throat, strictly speaking the voice ought not to be used at all, but inasmuch as, to many, this would mean starvation, the rule must be that when out of order the voice must be used as little as possible, which means that the voice must be rested (not a sound made louder than a whisper) when not actually engaged in work. Under these conditions the trained voice-user scores greatly from knowing how to diminish vocal effort and so save the voice when at work, which is invaluable. The author can vouch from personal experience that a trained voice can perform strenuous work. In pre-war days it was his custom to deliver over a thousand lectures in a year, which meant an average of six hours a day actual voice work during term time. This result can assuredly be put down to real rhythm, the purpose leading, and the movements so harmonising with that purpose, as to make their execution easy and convincing; this easy delivery having no wearing effect, but rather a strengthening effect upon the voice organs, and the conviction gaining the attention of the audience without effort. Artistic breathing is the fundamental hygienic treatment of voice, whether applied to its training or to the treatment of its affections. Faulty breathing is responsible for most of the vocal break-downs of voice-users. Abdominal and collar-bone breathing are voice-breakers, eurhythms and artistic breathing are voice-menders.

**Effect of
Education
upon Health.**

The normal individual can have pretty much the health that he wishes to have, or rather that he wills to have, for science is proving more and more every day that most diseases are preventable. Improved housing conditions, better hygienic occupations and habits, less crowding, a more liberal supply of air and light, better food, and above

all a more universal education, have by their co-operation dealt a deadly blow at the outbreaks of disease, which through their enormous death-roll earned the title of plagues, and have relegated them to the past ages. Much more yet remains to be done, and if only people could be persuaded that it is mainly their own fault if they are ill it would initiate a great stride in the advancement of hygiene. Education should prevent the plea of ignorance as an excuse for illness, for hygiene should take a very prominent place in general education. Prevention is always better than cure, so why not rely upon hygiene which prevents, rather than upon medicine which cures? Correct voice-use, dependent as it is upon correct breathing methods, must be a great preventer of disease.

Life is a fight against adverse influences which beset us on every side. There are poisons in the air we breathe, in the water we drink, in the food we eat, in the clothes we wear, in the community with whom we mix; we are continually in danger of getting chills of one or other of the vital organs from sudden changes of the weather, although this last evil has been proved to be far less potent than it was thought to be, by experience gained during the war.

Typhus fever, cholera, and malaria have practically ceased to exist in this country—small-pox, hydrophobia, and typhoid are rapidly disappearing—why should not consumption as well?

**Consumption
a preventable
disease.**

Consumption is the type of illness that comes of ignorance, an ignorance that allows of the neglect of the fundamental laws of ventilation. The health of the sufferer has been slowly but surely undermined by the persistent practice of breathing impure air, until the resistant powers are too feeble to withstand the attacks of the

Tubercle Bacilli. The simple hygienic precaution of periodically weighing all school children, and sending to an open air school all who are not gaining in weight proportionately to their stature, would go far in the prevention of consumption. Its immediate cause is the lowering of the resisting powers by the poisons in the air we breathe. An important contributory cause is due to faultiness in the way breathing is effected. Eurhythmic breathing exercises clearly are the remedy for the contributory cause, as good ventilation is the remedy for the disease itself.

**Illnesses caused
by impurities
in water.**

Typhoid fever, cholera, and dysentery are the chief illnesses that follow in the wake of ignorance in regard to drinking-water, and these diseases, common enough in tropical countries, are very rare in this country, where so much care and attention is bestowed upon the water supply. Very hard water may cause dyspepsia, constipation, and even goitre, and there is always danger of colic from the kind of water that acts readily upon lead pipes.

**Illness due
to Food.**

Outbreaks of scarlet fever have been traced to germs in the perfect food, milk, which have infected it at its source. The poisons present in measly pork will, when eaten, set up tapeworms unless the pork has been well cooked.

Ignorance in connection with the food we eat is also responsible for illness in other ways: (1.) The proportion of the foodstuffs may be wrong, and thus the resisting powers may be lowered—this may be helped too by a faulty arrangement of meals ill-adapted to varying circumstances; (2.) The cooking of the food may be at fault; (3.) Too much or too little may be eaten; it has been said that “the greater the wealth, the worse the indigestion.” Three meals a day, with no food or drink between meals, and at regular times, seems to be the ideal arrangement, the principal meal being taken as far as possible in the middle of the working day, and plenty of time being spent over it. If only a good proportion of bread or vegetables be taken, it is not likely that an over-abundance of meat will be consumed.

**Illness due to
Surroundings.**

Wool-sorters’ disease, anthrax bacilli in shaving brushes, and more commonly the body parasites are the poisons that cause illness in the clothes we wear. All kinds of infectious disease are the poisons that cause illnesses in connection with our social surroundings. Nothing fosters the spread of infection so much as ignorance. It is equally true that nothing is so efficacious in stopping an epidemic as the actions of an educated community. All places which are habitually crowded by the community should be regularly sprayed by an effective disinfectant, such as formalin, and of course should be efficiently ventilated and kept clean. It may be said that disinfection, ventilation, and cleanliness are each the antithesis of infection, and that the spread of infection is lessened in exact proportion to the efficiency of the precautions taken.

Education can be the most potent hygienic agent—hygiene in the sense of being a preventer of illness. Hygiene must be real and effective, not cranky and merely idealistic. Real hygiene demands action, not ideas; sensible, temperate precautions, not high-flown effusiveness. The simpler the precaution the better the result as a rule.

**The Resisting
Powers of the
Body.**

It is the duty of everyone to keep the resistant powers as high as possible. One of the simplest theories advanced in this connection is that germs of disease, which are present everywhere—in the dust of the air, in the impurities of water, in food, in our clothes, and on our neighbours—attack the body and fight a hand-to-

hand combat with the protecting cells of the body (cells resembling the white blood cells). If the cells win, the germs are killed; if the germs win, the cells are killed. The cells have every chance of winning if the resisting power is high, and every chance of losing if resistance is at a low ebb. Our powers of resistance are entirely dependent upon whether our habits in life are good or bad, hygienic or wilfully careless, intelligent or ignorant, controlled or selfish, eurhythmic or arrhythmic.

Hygienic Methods of Russian Academy of Dancing.

The Russians in their training of dancers for the Imperial Opera House left nothing to chance ; they took every hygienic precaution and availed themselves of the help and guidance of every kind of specialist. Sculptors and painters selected the candidates after they had been medically examined. They worked at their art throughout the day, every hour being occupied, but overwork carefully avoided ; their training lasted nine years. They lived in the Academy, and were only

allowed to see their relations at stated times. They had the best tuition obtainable in dancing, music, acting, and drawing, and special instruction in equilibrium and exercises for grace and expression. The girls had a playground in the garden ; the boys learnt fencing. The dietary was carefully selected, and hygienic measures adopted in the dormitory, a nurse being always in attendance on the girls. They were regularly examined by specialists for the hair, the teeth, the skin, the heart, the lungs, the digestion, and the nerves. The best of the Russians are great dancers, great artists in the full sense of the word.

Loss of Health through Civilisation.

To acquire genuine success in an art great study and persistent hard work are necessary. Why should we expect to acquire the art of living without any study or any care ? Health, we say, is natural and needs no study. Supposing health is an unfailing attribute of a man living a perfectly natural life, does it follow that it will become an attribute of a man living under the conditions imposed by civilisation ? The more communities are crowded together by civilisation, the more necessary becomes hygiene, the preventer of illnesses caused by the usages and habits of civilised beings. The more luxurious the style of living, the more the exercise required to counteract it. Want of occupation is probably a more active cause of illness than is too much occupation.

Training for Health.

We train strictly when we enter a physical competition, and strictly obey the regulations laid down for our observance during the term of training, in order that our physical powers may be at their very best on the day of the competition. Is it too much to ask the more thoughtful to pay reasonable attention to the laws of health, to think about the quality of the air, the water, and the food necessary for the upkeep of the body, and to consider the quality of the surroundings of that body—the clothes, the house and the community—in return for perpetual health and freedom from the annoyance of illness ? Hygiene is quite reasonable in its demands. It does not ask for anything of a super or ultra character, it pleads only for temperance in all things.

“ From labour health, from health contentment springs.”

Happiness and Worry.

“ Happiness our being’s end and aim ” should be the motto of those interested in hygiene ; the antithesis of this is “ worry.” Everyone desires happiness, and yet everyone gives way to worry. Worry, not work, damages the health and causes liability to disease. Those endowed with a nervous temperament worry most, and yet they, above

all others, should look upon the bright side of affairs, instead of dwelling upon the gloomy aspect. Every incident in life has its advantages as well as its disadvantages : thinking upon the advantages will make for happiness, calculating the amount of disadvantage causes worry. The more healthy and robust (the sanguine) hold on to the advantages and regard the disadvantages as obstacles which have to be overcome, but the more nervous regard the whole business as more or less of a calamity. Difficulties there always will be in life. They must be faced manfully, and it is astonishing how they disappear ; brooding over them makes them seem all the harder to cope with. Troubles should be gathered into a roped square and fought to a finish. The happy man does this ; the unhappy man, by running after trouble, often has to dodge pleasure and actually pays an interest on trouble before it is due.

Phlegmatic people are more liable to special diseases of the scrofulous order ; they are inclined to be listless, which makes them all the more liable to illness. They must be encouraged to shake off their listlessness and especially to take interest in outdoor pursuits.

The Health Bath. Sound arguments can be advanced both for and against the daily cold bath, but no one will dispute the advisability of sea bathing during the summer months. It is essential that a weekly health bath should be taken as follows :—Dress in flannels and by active exercise get into a good perspiration ; undress quickly and lie for a few minutes in a good-sized bath of really hot water ; thoroughly soap the body all over and until it is covered with a good lather, lie down again for a few minutes, and finally while standing in the hot water sponge down with tepid water. Give the body a good rubbing down with a large bath towel, and then leisurely dress in ordinary clothes, or better still in night attire and go to bed. The health bath will clean the body internally as well as externally by ridding the ducts of the sweat glands of their waste products ; the natural perspiration brought on by activity will dilate the ducts, the alkali of the soap will dissolve the tiny oily cakes blocking the ends of the tubes and any debris on the surface of the body, which will be washed away by the sponging and rubbed away by the rubbing of the bath towel. The same treatment is good for the hair (but not oftener than once a fortnight) ; after the bath the hair should be well massaged with oil.

Physical Exercises for Health. For the promotion of the health and grace of the body, especially for those who have not the opportunity for joining in the health-giving movements of our national games, the following well-known physical exercises are useful if hygienic principles are duly observed in the doing of them. Hygeia (Greek for health) is far more particular about the quality than the quantity of the movements. Regularity too is another important point. It is just as necessary to be regular with exercise and rest as it is to be regular with meals, eight hours' work, eight hours' play, eight hours' rest, and three meals a day. Never work or exercise on an empty stomach, never bathe or sleep on a full stomach.

Voice-users, spend your holidays as much as possible in the open air and dress suitably. Exercise in the open air hardens the body and makes it proof against disease ; the open air is infinitely superior to a gymnasium or any other indoor health resort. The more artistic the movements the greater the hygienic effect. For the sake of those who have learnt the tables of exercises laid down by educational bodies, the following modified selection has been made, to which the principles advocated in the earlier chapters of this book can be applied. This will do away with the necessity for learning a fresh set of movements, and will possibly appeal to busy people, but rhythm, sentiment, and artistry must take the place of jerk, alertness (so-called), and stiffness. If breathing is not thoroughly understood by the instructor, it is much better to rely upon games for the supply of the necessary breathing exercises.

It is quite certain that any agent which is potent enough to produce good results if properly applied, is equally potent in producing bad results if improperly applied. That this is true of breathing has been conclusively proved in Chapter VIII. It is equally true in its application to the question of correctness in poise.

“ The principle of progression from easy exercises of short duration to more difficult exercises of longer duration is essential.

“ Unusual movements are not the most suitable, for they produce an amount of fatigue and an expenditure of energy which are out of all proportion to the results. Many of the exercises found in systems of physical training are based upon the idea that all the muscles must be uniformly developed, and with this end in view positions which are never used in ordinary life are constantly assumed. The uniform development of all the muscles of the body is unnecessary and uneconomical.”

Positions.

At Ease : Rest :

Standing.

Feet.—Carry the left foot one foot-length to the left. Balance body equally on both feet.

Hands.—Place the hands behind the back. Keep both arms straight (the back of the fingers of the left hand should rest in the palm of the right hand ; the thumb of the right hand should be placed in the palm of the left hand).

Notes.—A more useful command for this position is the term “Rest.” Keeping the arms straight will keep the shoulders down, and is really more comfortable and restful than allowing the arms to be partially bent at the elbow with the hands lying in the hollow of the back.

Sitting.—Keep feet one foot-length apart, and hands in line with the feet behind the back at a distance of one hand-breadth from the buttocks, with the palms on the ground and the fingers directed backwards. Knees to be kept straight.

Lying.—Keep feet one foot-length apart, and the knees straight, and the arms resting on the ground at the sides of the supine body, with the palms facing inwards.

Hands-on-Hips :

Hands.—The hands should grip and rest upon the crest of the Ilium.

Elbows.—The elbows and wrists to be kept in the same vertical plane as the shoulders.

Wrists.—The wrists and the shoulders to be dropped downwards.

Principles.—Maintains the erect position and secures firmness of posture. Carries weight of shoulder girdle to hips. Keeps the hands and arms in a definite position and quiet during movements of other parts of the body.

Notes.—If the thumb side of the hand is made to feel throughout its whole length the crest of the Ilium, and the wrist is allowed to drop downwards, and if at the same time the elbow is not drawn backwards, the shoulders, elbows, and wrists will be in the same vertical plane as the collar-bone, and are in the best position for transferring the weight of the shoulder girdle direct to the hips ; this also gives additional firmness to the erect position and additional freedom to the respiratory movements of the chest-wall. An alternative and for many reasons a better position is the placing of the fists upon the hip-bones.

Arms upward—bend.

Arms.—Keeping the upper arms close to the sides (as in the position of attention), bend the forearms upwards.

Hands.—Hands and fingers should be flexed. Back of the hands to the front. Backs of the thumbs touching the outer edge of the shoulders.

Notes.—Shoulders must be kept quite still. The chest must not be cramped.

The following are usually called Starting Positions, but most of them are Leg Exercises, using finishing positions of the feet from which other exercises are done :—

Feet Close.—The toes to be raised, and the feet to be carried inwards until they touch one another ; the feet pivot upon the heels.

Feet Open.—The toes to be raised, and the feet carried outwards to any angle according to what is required—usually to a right-angle. The feet pivot upon the heels.

Feet Astride—Place.—Carry both feet sideways one foot-length, starting with the left foot.

Either the left or the right foot may be moved sideways one foot-length to the left or the right, when the command would be left (or right) foot astride—place.

Foot Outward—Place.—Carry one foot (left or right according to command) outwards one foot-length in the direction in which the foot is pointing, keeping both knees straight, and allowing the weight of the body to be equally balanced upon both feet.

Notes.—If the foot is carried outwards more than one foot-length it is difficult to keep both knees straight and the body equally balanced without stiffness. The position of “Foot forward place” is too constrained for ordinary use.

The Lunges.

Left (Right) Foot Outward—Lunge :—

Feet.—The foot (left or right according to command) to be carried three foot-lengths outwards in the direction in which the foot is pointing. The knee of the front leg to be bent well over the toe, the knee of the back leg to be straight, and the foot of the back leg to be flat upon the ground.

Shoulders.—The shoulders to be nearly square to the direction of the lunge.

Body.—The body to be held erect.

Left (Right) Side—Lunge :—

Feet.—The foot (left or right according to command) to be carried three foot-lengths directly to the side, keeping its original angle; the knee to be bent over its own toe, the knee of the other leg to be straight, foot flat on the ground.

Shoulders.—The shoulders to be held square to the original front.

Body.—The body to be kept erect.

Notes.—The recovery from either placing or lunging is made by strongly pointing the toes of the advanced foot, pushing off from the balls of the toes, and drawing it back to the other foot. To make exercises of these leg starting positions use the command “recover” for the second movement, i.e., “Right foot outward place.” “Recover” (or right foot inward place).

General Notes on the Starting Positions.—As the starting positions are the fundamental positions of all the exercises that are used in physical education, it is essential that attention should be paid to the smallest details, and that these starting positions should be thoroughly mastered before proceeding to the teaching of any kind of complicated or combined movements. No amount of smartness, uniformity, and discipline can possibly make up for inefficiency in maintaining the correct fundamental positions.

Neck Rest.—It will be noticed that “Neck rest” has been omitted from the starting positions. There is no harm in using the neck rest as an exercise, but it is not a good position to be maintained for any length of time, as it has a tendency to fix the chest and to make the chin poke forward. This however will be diminished if the fingers of the right hand are placed upon the fingers of the left hand at the back of the head, and the elbows are kept in the same horizontal plane.

Arms Stretching Movements.

Position.—Attention.

Arms upward bend.

Movements:—

Forward.—(1.) Straighten the arms in a forward direction until they are parallel with one another and with the floor on a level with the shoulders, shoulder-width apart, and palms facing inwards, fingers straight, thumbs against forefingers.

(2.) Arms upward bend.

Upward.—(1.) Straighten the arms in an upward direction straight above the shoulders until they are parallel to one another and perpendicular to the floor, shoulder-width apart, palms facing inwards, fingers straight, thumbs against forefingers.

(2.) Arms upward bend.

Sideways.—(1.) Straighten the arms in a sideways direction until they are parallel with the floor, on a level with the shoulders in a perfectly straight line, palms facing downwards, fingers straight, thumbs against forefingers.

(2.) Arms upward bend.

Downward.—(1.) Straighten the arms in a downward direction until they are parallel with one another at the sides of the body, palms turned inwards, fingers straight, thumbs against forefingers.

(2.) Arms upward bend.

Notes.—There must be full extension of all the joints of the upper limbs in all the stretch positions. The arms should be parallel to one another in the forward, upward, and downward stretch positions. The arms should be in a straight line in the sideways stretch position.

The arms should be parallel with the floor and on a level with the shoulders in the forward stretch position.

The palms should face inwards in the upward stretch position, and downward in the sideways stretch position.

The arms stretching movements may be performed as four separate exercises of two movements each or as one continuous exercise of eight movements. The stretch positions are the same as the raised positions: the upward stretch is sometimes called the stretch-standing position and the sideways stretch the yard-standing position.

Straight Arm Movements.

Position.—Attention.

Arms downward stretch.

Movements:—

(a.) { <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">Forward Raising.</td><td>(1.) Raise the straight arms to the forward stretch position.</td></tr> <tr> <td style="padding-right: 20px;">Upward Raising.</td><td>(2.) Raise the straight arms to the upward stretch position.</td></tr> <tr> <td style="padding-right: 20px;">Forward Lowering.</td><td>(3.) Lower the straight arms to the forward stretch position.</td></tr> <tr> <td style="padding-right: 20px;">Downward Lowering.</td><td>(4.) Lower the straight arms to the downward stretch position.</td></tr> </table>	Forward Raising.	(1.) Raise the straight arms to the forward stretch position.	Upward Raising.	(2.) Raise the straight arms to the upward stretch position.	Forward Lowering.	(3.) Lower the straight arms to the forward stretch position.	Downward Lowering.	(4.) Lower the straight arms to the downward stretch position.
Forward Raising.	(1.) Raise the straight arms to the forward stretch position.							
Upward Raising.	(2.) Raise the straight arms to the upward stretch position.							
Forward Lowering.	(3.) Lower the straight arms to the forward stretch position.							
Downward Lowering.	(4.) Lower the straight arms to the downward stretch position.							

	Sideways Raising.	(1.) Raise the straight arms to the sideways stretch position.
(b.)	Upward Raising.	(2.) Raise the straight arms to the upward stretch position.
	Sideways Lowering.	(3.) Lower the straight arms to the sideways stretch position.
	Downward Lowering.	(4.) Lower the straight arms to the downward stretch position.
(c.)	Forward and Upward Raise.	(1.) Raise the straight arms forward to the upward stretch position.
	Forward and Downward Lower.	(2.) Lower the straight arms forward to the downward stretch position.
(d.)	Sideways and Upward Raise.	(1.) Raise the straight arms sideways to the upward stretch position.
	Sideways and Downward Lower.	(2.) Lower the straight arms sideways to the downward stretch position.

Notes.—The raised and the stretched positions are the same, but whereas in the movement of raising the arms are kept straight, the stretch must always be preceded by a bend.

The palms should be turned when necessary at the level of the shoulder.

As the term "stretch" conveys the idea of effort, it is advisable to substitute the term "raised" for "stretch" whenever possible.

Arms Swinging:—

Position.—Attention.

Arms downward stretch.

Movements:—

(1.) *Forward Raise.*—Raise the straight arms to the forward stretch position.

(2.) *Sideways Swing.*—Swing the straight arms to the sideways stretch position.

(1.) *Forward and Upward Raise.*—Raise the straight arms forward to the upward stretch position.

(2.) *Forward and Sideways Swing.*—Swing the straight arms forward and then sideways in a continuous circular movement to the sideways stretch position, turning the palms at the shoulder level.

Arms Circling:—

Position.—Attention.

Arms downward stretch.

Movement.—Swing the straight arms in a continuous circular movement through the following positions: (1) forward stretch; (2) upward stretch; (3) sideways stretch; (4) downward stretch; turning the palms on lowering at the shoulder level.

Head Movements.

Position.—Attention.

Hands (or fists) on hips.

Movements:—Head.

(1.) *Forward Bend.*—Bend the head forward, lowering the chin until it nearly touches the chest.

(2.) *Backward Bend.*—Bend the head backward, raising the chin until the face is nearly parallel with the ceiling.

- (3.) *Sideways Bend*.—Incline the head sideways towards the right and left shoulders alternately, keeping the chin quite still.
- (4.) *Turning* (left and right alternately).—Rotate the head on the neck by turning the face to the left until the chin is in a line with the left shoulder ; then rotate the head on the neck by turning the face to the right until the chin is in a line with the right shoulder. The chin is to be kept in the same plane throughout.
- (5.) *Circling* (or rolling).—Combine all the above movements, allowing the chin to describe as large a circle as possible.

Body Movements.

Position.—Attention.

Feet astride placed.

Movements :—Trunk.

- (1.) *Forward Bend*.—Incline the body forward, moving it at the hip joints.
- (2.) *Backward Bend*.—Incline the body backward, with the feet in the outward place position. Keep the hips back as much as possible.
- (3.) *Sideways Bend*.—(Lateral trunk bending.) Bend the body sideways to the left and right alternately, making as great a bend as possible between the shoulders and the hips. For this exercise it would be better to have the hands in the upward bend position instead of the hip firm position. Do not turn the body.
- (4.) *Turning*.—(Left and right alternately.) Rotate the body upon the pelvis as far as possible alternately to the left and right. Let all the movement take place in the spine by keeping the pelvis and the legs still throughout the movement.

Balance Exercises.

Straight Leg Movements :—

Position.—Attention.

Hands (or fists) upon the hips (or shoulder support).

Movements :—

- (1.) *Leg Forward Raise*.—Raise the leg (left or right) in a forward direction, keeping the knee straight and pointing the toes downwards, supporting the weight of the body upon the back leg.
- (2.) *Leg Sideways Raise*.—Raise in a sideways direction.
- (3.) *Leg Backward Raise*.—Raise in a backward direction.
- (4.) *Leg Circling*.—Make a continuous circular movement of the three movements already described, without stopping.

Notes.—Keep the body, arms, and head quite still, moving the legs only. Keep the toes of the moving leg pointing down as much as possible.

It is easier and better to do these movements in the position of shoulder support.

Knees Full Bend :—

Position.—Attention.

Hands (or fists) upon the hips.

Movements :—

- (1.) Heels raise three inches.
- (2.) Knees bend till the seat nearly sits upon the heels.
- (3.) Knees straighten.
- (4.) Heels lower.

Notes.—Keep the trunk erect, steady, and well-balanced.

Knees Raising :—**Position.**—Attention.

Hands (or fists) upon the hips (or shoulder support).

Movements :—

- (a.) (1.) Raise the knee (right or left) straight to the front, bending it while raising it, until the thigh is at right-angles to the body, the leg at right-angles to the thigh, the foot at right-angles to the leg.
- (2.) Lower the knee.
- (b.) (1.) Raise the knee as before, and then straighten the knee and the ankle while the thigh is at right-angles to the body.
- (2.) Lower the knee.

Notes.—Keep the body perfectly erect, steady, and well-balanced.**Jumping Exercises.****Upward Jumping :—****Position.**—Attention.

Hands (or fists) upon the hips.

Movements :—

- (1.) Heels raise (three inches).
- (2.) Knees bend.
- (3.) Upwards jump.

Quickly straighten knees, and spring definitely but lightly from the ground and land again upon the toes, and quickly bend the knees again.

- (4.) Knees stretch.
- (5.) Heels lower.

Notes.—The body must be well-balanced throughout.**Astride Jumping :—****Position.**—Attention.

Feet astride.

Hands (or fists) upon the hips.

Heels raised three inches.

Movements :—

- (1.) Spring and at the same time carry the feet inwards, so that on landing on the toes the heels are almost touching.
- (2.) Spring and at the same time carry the feet outwards to the feet astride position. Continue movements till told to halt, heels lower, and feet inwards place.

Notes.—Astride jumping accompanied with arm raising and lowering sideways is a good movement to get the class warm on a cold day.

Marching.

- (1.) Mark time (heels to be raised three inches).
- (2.) Quick March.
- (3.) Double Time or Running.
- (4.) With Heels Raising.
- (5.) With Knee Raising.
- (6.) Hopping with Leg Forward.
- (7.) Hopping with Leg Backward.
- (8.) Changing Step.

Notes.—The above are variations that can be introduced to counteract the monotony of ordinary marching. There must be an easy swing of the body and arms, and a complete absence of stiffness.

“The position of Attention should be one of alertness without strain. In marching the natural movements of the arms and the swing of the body should not be suppressed. A soldier ought to march in the manner most economical of physical exertion, in order that he may husband his strength and be capable of a great effort whenever the demand may be made.”

Extract from a Manual of Military Hygiene.

CHAPTER XII.

EURHYTHMICS.

THE PRACTICE OF EURHYTHM.

**Eurhythmic
Exercises for
Remedial Work.**

The following scheme of Eurhythmic Exercises was devised by the author and used by him during the war as "Remedial Exercises" for the treatment of the wounded. It was found that the more the treatment approached the movements used in the ordinary social dances of the day the greater and more successful were the results. Every conceivable kind of treatment by movement was tried, from the ordinary physical training of the army to actual social dancing. Treatment by games—football, boxing, and organised games; treatment by dancing, folk-dances, and national dances; treatment by drill, route marches, and bayonet fighting.

**Dancing instead
of Drill.**

It was soon discovered that there was something wanting in drill. It lacked the valuable curative agent, so all-important in "remedial work," the special driving force or animus without which cures could hardly be effected, the real live force to supply the active principle of the prescription. This was found to exist in the movements belonging to social dances. The wounded soldiers became more and more interested in the work as they gradually learnt the principles of the laws of movement, principles belonging to social dancing as well as to all games of skill, to all accomplishments, and to skilled labour. The principles of artistry could not be conveyed by ordinary physical training, by folk-dancing, by organised games, or by route marching, which all savoured too much of drill; they could be conveyed by games of skill, football, cricket, boxing, and bayonet fighting, and by national dancing. All these forms of movement were used as much as possible and encouraged in every way, but good as they were they could not compare at all with the utility of social dancing in dealing with the treatment of patients whose attendances varied from a hundred to two hundred each hour. In a large gymnasium a class of a hundred can be drawn up in files of eight, and can be put through the varying steps of the popular dances at the same time, the instructor taking the class directing the order of his instruction and of the dancing steps, the other instructors helping and advising those who have to contend with either mental or physical disabilities. It is astonishing how infectious the "spirit" of movement becomes in a large class conducted by an animated and skilful instructor, especially if the desired movements are sufficiently skilful without being too difficult to accomplish. This is exactly what social dancing supplies; the movements are very skilful, but at the same time quite easy, infinitely easier than the movements in a game of skill or even in the national dances. Another great advantage is that the movements when accomplished can be used at a social gathering; that is to say, the movements themselves are really immediately useful. This is a great incentive to work.

Eurhythmics. The power of being able to control a large class by giving them useful movements, useful enough to interest them and make them eager to improve, is a most valuable asset, and cannot be obtained in any other way. Short daily marches after the work in the gynnasium were found to have excellent results from a medical point of view, and to some extent counteracted the one unfavourable point in remedial treatment, the necessity for working indoors instead of outdoors. It is easier to keep the attention of a large body of men when working in a room, and a good floor is essential for dancing.

Individual and General Instruction.

Besides dancing the patients were given eurhythmic exercises, arranged in general and special tables. That is to say, they were grouped into squads according to their disabilities, and were specially treated in their squad work for their particular kind of disability. Also special individual instruction was given to special cases, and even special apparatus was invented of a simple kind to cope with the difficulties that many of the disabled brought with them. It is interesting to note in this connection that it was found that the simpler the mechanical device the better the results obtained.

Medical Examination.

Every patient on joining the remedial class was examined by the medical officer in charge, his treatment was duly prescribed for him, he was allotted a definite category and a definite squad, his instructions were entered in a book, and he was handed over to the instructor in charge of his particular squad. The instructor was held responsible for the carrying out of the medical officer's instructions ; the instructor was present at the weekly examination held by the medical officer of every man in his squad. As the patient improved his category was altered, and his work became more general and less specialised, until he was eventually discharged as being fit. The lowest categories spent half their time (about twenty-five minutes) on special apparatus and the remainder on squad work and special instruction. The higher categories spent half their time on squad work and the remainder on general work. The lowest categories did not go for a march.

Musical Tables. The general work consisted of "eurhythmic exercises" leading up to social dancing. The principles of practice of these eurhythmic exercises are herein set forth, together with the musical accompaniments found to be in harmony with the movements.

The exercises are arranged in tables, general and special, and include two musical tables in which the sequence of the movements are always the same and the exercises follow one another without any command until the table is completed. This saves time, keeps the patients moving and well exercises the whole body and, incidentally, the mind at the same time ; it even adds to the interest of the work.

At the end of the tables of eurhythmic exercises are special exercises for emphasizing the principles of the laws of movements, and these form a suitable connecting link between the exercises and the dances.

Rhythrical Marching.

Rhythical marching should as far as possible be accompanied by music, and an easy carriage of the body in the erect position should be maintained. The arms should swing from the shoulder. They will swing as far forward as the advanced foot if they are not checked, but are allowed to swing loosely with the straightened thumb leading. The body itself will sway from side to side and will turn slightly if it is held erect without being stiffened, and the head gracefully poised upon the neck will move with the body. The requisite elasticity of the foot can be acquired by marching on the toes with a spring-like movement of the feet, which strengthens the ankle and instep besides producing elasticity of the foot generally.

Commands.

It is a great advantage to have as few commands as possible.

Rest means taking up the position of "Rest."

Steady means halting in that part of the movement when the command is given, chiefly for corrective purposes.

Move is the command for commencing and carrying on the movement.

Position is the command for taking up the special position that the movement requires.

Example.—Name the Exercise (or Table).

"Trunk Rolling" (or Musical Table).

Position.

With Music—Move.

Rest.

An easy and effective way of getting a number to take up suitable positions for exercising is to give the following commands :—

In two ranks dressing by the right—Fall in.

Attention.

Right turn.

In alternate pairs right and left wheel forming fours down the centre—
Quick march.

In alternate fours right and left wheel forming eights down the centre.
Mark time and open out.

Check distances by raising arms sideways.

Left turn.

Arms lower.

Front turn.

Even ranks one pace forward—March.

Rest.

The original front rank become odd ranks and the original rear rank even ranks.

General Notes on Movements.

In all exercises move that part of the body that is named in the command, keeping all the other parts quite still and in a position of the greatest stability.

Make the fullest movement in the easiest possible manner to ensure flexibility.

All movements to be made rhythmically in strict time with the music, avoiding jerk, snap, and rigidity. The tune to be rhythmical with the character of the movement; a light movement must have a musical accompaniment that is light in character, a grandiose movement requires a grandiose musical accompaniment, hence the necessity for an intelligent accompanist.

The instructor, the pianist, and the class, like the conductor, the pianist, and the choir, must be in rhythmical accord, must understand the purport of every movement, and enter heart and soul into the spirit of the interpretation thereof. The interest becomes animated with the desire to do well, the well-controlled body answers perfectly to the well-informed mind and rhythmical action follows, for all have learned what they ought to do and are able to do it.

Quality in Movement.

Quality in movement is just as essential as quantity in movement, for in rhythm time and space have to be considered just as much as force in their relationship to the purpose that determines the movement. The maximum result with the minimum of effort is the object of our aim in the orderly musical time consistent with that object. Movements are thus accomplished in the easiest possible manner, avoiding flabbiness or undue force in action. The ease promotes grace in movement, and grace in movement promotes both flexibility of body and its adaptability to the mind.

The Rhythmical Swing.

The rhythmical swing as used in golf is the basis of all graceful movement, for bending and circling (or rolling) are in reality only modifications of swinging. Any number of varieties can be introduced by combinations of swinging, bending, and circling; whenever combinations are introduced attention must be paid to the time-value of each of the individual movements. It is better as a rule to start with individual movements, leaving the combined movements for a later stage of instruction, when the chief principles of movement have been mastered.

Individuality.

It is possible, however, to err on the side of paying too strict an attention to individualism, and to waste valuable time by too much exactitude. The real purpose of breathing and rhythmic exercises is to get a marked improvement in physique and movement in reasonably quick time. The personal factor of both the instructor and the instructed is of great importance, and materially adds to the interest of the work—an interest that must not be sacrificed upon any consideration.

Value of Music.

Music undoubtedly adds to this interest in every way, and is a welcome colleague. It may be said that it presides over the time factor in rhythm, and that it regulates the orderliness in action by bringing into play a direct connection between the sense of hearing and the sense of muscular movement in a way that nothing else can do, and thereby introduces the special charm or subtlety that is of the highest importance in artistic action—the charm that is so marked in the beautiful strokes of the master players in games of skill, and which enables the onlookers to detect the intention of the player. The portrayal of the intention or purpose is the essence of all rhythm.

Elasticity.

Rhythmical swinging of the limbs and the trunk produces elasticity of the body, and the rhythmical swinging of the ribs produces elasticity in breathing.

The rhythmical bending and circling of the different parts of the body not only increases elasticity but has a marked effect upon the venous circulation, for every time a joint is bent and straightened, and more especially when a joint is rolled (circled), the veins are shortened and lengthened, and the blood is made to circulate through them more quickly, hence the importance of rolling movements for heart affections, especially in the lying position.

The following eurhythmic exercises, arranged for the sake of convenience and clearness in general and special tables, are suitable for voice, health, or remedial use. They should be performed in strict accordance with the principles already advanced, and whenever possible with a musical accompaniment, which can be varied to suit the taste of the instructor and the pianist. Tunes that have been found to be suitable in practice are mentioned in connection with each exercise.

GENERAL TABLE (Exx. I.—XIII.).

EXERCISE I.—Breathing Exercise.

Position.—Attention.

Feet astride.

Fists on side of chest.—Elbows square to the front.

Breathe out.—Breathe out by swinging ribs inwards.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

Note.—The swing to be accomplished in the easy graceful style of the artist. The chest to be free from stiffness and unhampered in movement, shoulders down and square to the front. Fists not to press upon side walls of chest.

EXERCISE II.

*Knees Bending and Straightening.**Position.*—Attention.

Hands on hips.
Heels raised.

Movements.—(1.) Knees bend.

(2.) Knees straighten.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Eight bars of “O no, John.”

Note.—A downward and upward movement in strict time with the music, avoiding any semblance of jerk. The commands “down and up” are useful in this exercise in keeping the movements smooth. The trunk to be kept upright, the seat being directed towards the heels in the downward movement.

EXERCISE III.

*Head Rolling.**Position.*—Attention.

Feet astride.
Hands on the hips.
Head forward bent.

Movements.—(1.) Raise chin and turn it towards the left shoulder.

(2.) Bend head backward.

(3.) Lower chin and turn it towards the right shoulder.

(4.) Bend head forward.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen movements in all.)

Musical Accompaniment.—“Come, lasses and lads.”

Note.—It is advisable to make two rolls to the left and two rolls to the right in order to prevent giddiness.

EXERCISE IV.

Breathing Exercise.

(Bellows action.)

Position.—Breathing position.*Breathe out.*—Breathe out by swinging ribs inwards and draw elbows slightly backward.*Movements.*—(1.) Swing out the ribs and carry elbows slightly forward.

(2.) Swing in the ribs and carry elbows slightly backward.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

Note.—The bellows action gives the performer a good idea of the action of the chest. It expands like a pair of bellows to admit air (breathing-in), and it contracts to eject the air (breathing-out). The elbows must not be carried back far enough to stretch the pectoral muscles and so stiffen the chest.

EXERCISE V.

Arms swinging sideways and upward, sideways, and downward

(Heels raising and head backward bending.)

Position.—Attention.

- Movements.*—(1.) Swing the arms sideways and upward (turning the palms upward at the level of the shoulders), raise the heels and bend the head (half) backward.
 (2.) Swing the arms sideways and downward (turning the palms downward at the level of the shoulders), lower the heels and raise the head.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—As heels raising and head backward bending accompanies the arm swinging, the exercise becomes a combined exercise, and it is necessary to insist upon the combinations being co-ordinated. Especially notice the tendency to allow the heels to bump down in the second movement instead of lowering them in strict time with the music. The upraised hands should be shoulder-width apart and straight above the shoulders with the elbows straightened. The hips should not be allowed to go forward. The head should not be bent too far backward.

EXERCISE VI.

Trunk Rolling.

Position.—Hands on hips.

Feet astride.

Trunk full downward bent.

Head forward bent.

Movements.—(1.) Trunk half upward raise and turn towards left foot.

(2.) Trunk erect.

(3.) Trunk half downward bend and turn towards right foot.

(4.) Trunk full downward bend.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen in all, two rolls being made to the left and two rolls to the right.)

Musical Accompaniment.—“Come, lasses and lads.”

Note.—There should be a complete roll and turn of the trunk; the top of the head should make as big a circle as possible.

EXERCISE VII.

Breathing with Arms Parting.

Position.—Breathing position with arms sideways raised and palms directed forward.

Breathe-out.—Breathe-out by swinging the ribs inward and at the same time swing the arms forward.

Movements.—(1.) Swing out the ribs and swing the arms sideways.

(2.) Swing in the ribs and swing the arms forward.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

Note.—Hands should be shoulder-width apart in front, and in line with the shoulders at the side.

EXERCISE VIII.

*Heels raising, Mark Time.**Position.*—Attention.

Hands on hips.

Heels raised one inch.

- Movements.*—(1.) Bend the left knee over the left toes while raising the left heel three inches.
 (2.) Bend the right knee over the right toes while raising the right heel three inches, and at the same time straighten the left knee and lower the left heel three inches.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”*Note.*—At the end of the exercise lower the heels.

EXERCISE IX.

*Trunk Bending Sideways.**Position.*—Attention.

Feet astride.

Hands on hips.

- Movements.*—(1.) Bend the trunk directly sideways to the left, letting the head drop towards the left shoulder.
 (2.) Return to the erect position.
 (3.) Bend the trunk directly sideways to the right, letting the head drop towards the right shoulder.
 (4.) Return to erect position.
 (Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—“The girl I left behind me.”*Note.*—The head should be bent sideways as well as the trunk, making as great a sideways bending as possible between the head and the shoulder, and between the shoulder and the hip.

EXERCISE X.

*One-sided Breathing.**Position.*—Breathing position, trunk bent sideways to the left.*Breathe-out.*—Breathe-out by swinging ribs inward.

- Movements.*—(1.) Swing out the ribs.
 (2.) Swing in the ribs.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz*Note.*—By bending the trunk sideways (that is by making as much bend as possible between the shoulders and the hips) the lung on the bent side becomes cramped, and breathing is mostly confined to the free and uppermost lung. A change from left to right bending to be made in the middle of the exercise during the eighth bar.

EXERCISE XI.

Arms swinging forward and upward, forward, downward, and backward.
 (Heels raising and head backward bending.)

Position.—Attention.

Left turn.

Movements.—(1.) Swing the arms forward and upward, and at the same time raise the heels four inches and bend the head (half) backward.
 (2.) Swing the arms forward, downward, and backward, and at the same time lower the heels and raise the head.
 (Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—Keep the hips pressed back in the arms upward raised position; it is in order to see the position of the hips more easily that the class is turned to the left. This is a combined exercise, so all the movements should be co-ordinate.

EXERCISE XII.

With feet closed, heels raising, Mark Time.

Position.—Attention.

Hands on hips.

Feet closed.

Heels raised one inch.

Movements.—(1.) Bend the left knee outward and raise the left heel three inches.
 (2.) Bend the right knee outward and raise the right heel three inches, and at the same time straighten the left knee and lower the left heel three inches.
 (Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

Note.—By this exercise the inner side of the foot is raised, which is excellent for flat-footed patients. When the movements are finished, lower the heels.

EXERCISE XIII.

Back Breathing.

Position.—Attention.

About turn.

Feet astride.

Back of hands on lower part of back of chest.

Trunk bent slightly downward.

Breathe-out.—Breathe-out by swinging the ribs inward.

Movements.—(1.) Swing the ribs outward.

(2.) Swing the ribs inward.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

Note.—See Breathing Exercise VI., Chapter VIII.

By bending the trunk, the mounds made by the ribs (as they curve backward from the spine) become more prominent; these mounds are full of lung, and it is very important to get this part in good working order.

[*Note.*—The General Table ends here.]

MUSICAL TABLE (Exx. XIV.—XXII.).

EXERCISE XIV.

Foot placing sideways with heels raising and knees bending.

Position.—Attention.

Hands on hips.

Movements.—(1.) Left foot sideways place (two foot-lengths).

- (2.) Left heel lower.
- (3.) Heels raise (four inches).
- (4.) Knees bend (outward over toes).
- (5.) Knees straighten.
- (6.) Heels lower.
- (7.) Left heel raise.
- (8.) Heels together place.
- (9.) Right foot sideways place (two foot-lengths).
- (10.) Right heel lower.
- (11.) Heels raise (four inches).
- (12.) Knees bend (outward over toes).
- (13.) Knees straighten.
- (14.) Heels lower.
- (15.) Right heel raise.
- (16.) Heels together place.

Musical Accompaniment.—Eight bars of a March, “The Men of Harlech.”

Note.—The Musical Table consists of a sequence of nine exercises (XIV. to XXII.) which follow one another without a break. A Musical Accompaniment is suggested on page 156. This is continuous, the change of the tune indicates the change of movement. The commands for this table are:—Musical Table—Position—With Music—move—Rest.

EXERCISE XV.

Arms circling, with heels raising and head backward bending.

Position.—Attention.

Movements.—(1.) Arms swinging forward and upward, with heels raising and head (half) backward bending.

- (2.) Arms swinging sideways and downward, with heels lowering and head upward raising.

(Repeat movements (1) and (2) seven times, making sixteen movements in all.)

Musical Accompaniment.—Sixteen bars of a Waltz, “Golden slumbers.”

Note.—The arms swing up in movement (1) in strict time to the three beats of two bars and down in movement (2) to the three beats of the next two bars, and so on.

EXERCISE XVI.

Heels raising and knees bending.

Position.—Attention.

Hands on hips.

Movements.—(1.) Heels raise.

- (2.) Knees bend (outward over toes).

- (3.) Knees straighten.

- (4.) Heels lower.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen movements in all.)

Musical Accompaniment.—Eight bars of a March tune, “The Vicar of Bray.”

EXERCISE XVII.

Trunk turning with the arms forward raised (palms facing downward).

Position.—Attention.

Arms forward raised (palms facing downward).

Feet astride.

Movements.—(1.) Turn trunk and head to the left.

(2.) Turn trunk and head to the front.

(3.) Turn trunk and head to the right.

(4.) Turn trunk and head to the front.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen movements in all.)

Musical Accompaniment.—Eight bars of “Believe me if all those endearing young charms.”

Note.—The eyes should be directed upon the back of the hands throughout the movements and the body kept upright.

EXERCISE XVIII.

Trunk turning with arms swinging.

Position.—Feet astride (right heel raised and directed to the right).

Trunk turned to the left (shoulders squared to the left).

Arms raised half-way between the forward and upward raised position.

Movements.—(1.) Swing the arms from the left to a similar position on the right while turning the trunk from left to right and raising the left heel and lowering the right heel.

(2.) Raise the arms from the half-way position to the upward raised position, and at the same time bend the head half backward.

(3.) Swing the arms from position (2) to position (1) while turning the trunk from right to left and raising the right heel.

(4.) The same as movement (2), facing left.

(Repeat movements, making sixteen movements in all.)

Musical Accompaniment.—Eight bars of “Every man take his glass.”

Note.—The shoulders should be squared to the left and right alternately, and the right and left heel should be raised alternately and directed straight backward. The weight of the body should be upon the front foot, the toe of the back foot being for balance purposes only. The body should be held erect.

EXERCISE XIX.

Trunk full downward bending.

Position.—Feet astride.

Arms upward raised (palms facing forward).

Head half backward bent.

Movements.—(1.) Trunk half downward bend.

(2.) Trunk full downward bend.

(3.) Trunk half upward raise.

(4.) Trunk full upward raise.

(Repeat movements, making sixteen in all.)

Musical Accompaniment.—Eight bars of “Bonnie Dundee.”

Note.—The back should be rounded as much as possible and the head well bent in the downward direction. It is as well in movement (2) to grasp the back of the lower part of each calf of the leg with the corresponding hand.

EXERCISE XX.

Left and right turnings with arms swinging upward.

Position.—Attention.

Movements.—(1.) Left turn (pivoting on heel and toe), and swing arms upward.

(2.) Bring up rear foot and swing arms downward.

(Repeat movements, making four turns to the left and four turns to the right, sixteen movements in all.)

Musical Accompaniment.—Sixteen bars of a March, “Charlie is my darling.”

Note.—The movements should be stately, and strictly in time with the music.

EXERCISE XXI.

Knees full bending with arms raising sideways and upward.

Position.—Attention.

Movements.—(1.) Heels raise and arms sideways raise.

(2.) Knees full bend and arms upward raise.

(3.) Knees straighten and arms sideways lower.

(4.) Heels lower and arms downward lower.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen movements in all.)

Musical Accompaniment.—Eight bars of a March, “Early one morning.”

Note.—A difficult exercise, to be performed slowly and in strict time, with the trunk kept erect throughout. Note the tendency to hasten movements (1) and (4) and to prolong movements (2) and (3).

XXII.—BREATHING EXERCISE.

Position.—Attention, with arms sideways raised.

Breathe-out.—Breathe-out, and lower arms.

Movements.—(1.) Swing out the ribs and raise the arms.

(2.) Swing in the ribs and lower the arms.

(Repeat movements (1) and (2) seven times, making sixteen movements in all.)

Musical Accompaniment.—Sixteen bars of a Waltz, “The Ash Grove.”

Note.—The arms in the sideways raised position to be exactly on a level with the shoulders. The breathing to be done smoothly and in time with the arm movements.

[*Note.*—The Musical Table ends here.]

HEART AND ABDOMINAL TABLE (Exx. XXIII.—XXXIV.).

EXERCISE XXIII.

Back Breathing.

Position.—Sitting.

Trunk forward bent.

Backs of hands placed on lower part of back of chest.

Breathe out.—Breathe out by swinging the ribs inwards.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

EXERCISE XXIV.

*Trunk bending (Rowing).**Position.*—Sitting.

Arms forward raised.

Movements.—(1.) Bend the trunk downward, making the back as round as possible, till finger-tips touch the floor.

(2.) Raise the trunk to the erect position.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”*Note.*—The finger-tips to touch the ground by bending the body, not by “dipping” the arms.

EXERCISE XXV.

Trunk Turning

(with the arms forward raised, palms down).

Position.—Sitting.

Arms forward raised.

Movements.—(1.) Turn trunk and head to the left.

(2.) „ „ „ front.

(3.) „ „ „ right.

(4.) „ „ „ front.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—Eight bars of “Believe me if all these endearing young charms.”*Note.*—The eyes to be directed upon the back of the hands throughout the movements, and the body kept erect.

EXERCISE XXVI.

*One-Sided Breathing.**Position.*—Sitting.

Breathing position.

Trunk to the left bent.

Breathe-out.—Breathe-out by swinging the ribs inward.*Movements.*—(1.) Swing out the ribs.

(2.) Swing in the ribs.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.*Note.*—See Exercise X. General Table.

EXERCISE XXVII.

*Head Rolling.**Position.*—Sitting.

Rest position.

Head forward bent.

- Movements.*—(1.) Raise chin and turn toward left shoulder.
 (2.) Bend head backward.
 (3.) Lower chin and turn toward right shoulder.
 (4.) Bend head forward.
 (Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—“Come, lasses and lads.”

Note.—It is advisable to make two rolls to the left and two to the right, to prevent giddiness.

EXERCISE XXVIII.

Leg Circling.

Position.—Lying.

Attention.

Left hand placed flat on body above the middle of the abdomen (right hand below).

- Movements.*—(1.) Circle the left leg inward and upward.
 (2.) Circle the left leg outward and downward.
 (3.) Circle the right leg inward and upward.
 (4.) Circle the right leg outward and downward.
 (Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—The toes to be pointed, and as large a circle as possible made.

EXERCISE XXIX.

Head Raising and Abdominal Pressing.

Position.—As in Exercise XXVIII.

- Movements.*—(1.) Raise the head upward and forward, getting chin right down upon the chest.
 (2.) Lower the head.
 (3.) Draw in the front abdominal wall.
 (4.) Let out the front abdominal wall.
 (Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—Eight bars of “Believe me if all those endearing young charms.”

EXERCISE XXX.

Knee Raising.

Position.—As in Exercise XXVIII.

- Movements.*—(1.) Raise left knee.
 (2.) Lower left knee.
 (3.) Raise right knee.
 (4.) Lower right knee.
 (Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—When the knee is raised the thigh should be square with the body, the leg with the thigh, and the foot with the leg.

EXERCISE XXXI.

Position.—As in Exercise XXVIII.

Movements.—(1.) Swing the arms forward and upward.

(2.) Swing the arms forward and downward.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XXXII.

Foot Rolling.

Position.—Lying.

Left knee raised.

Hands on the shin.

Movements.—(1.) Circle the left foot outward and downward.

(2.) Circle the left foot inward and upward.

(3.) Circle the left foot inward and downward.

(4.) Circle the left foot outward and upward.

(Repeat movements (1), (2), (3), and (4) once with the left foot and twice with the right foot, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XXXIII.

Trunk Rolling.

Position.—Sitting.

Feet apart.

Knees semi-flexed.

Hands grouping inside of thighs just above knees.

Trunk and head fully bent downward.

Movements.—(1.) Half raise trunk while turning and bending it to the left, looking at left foot.

(2.) Raise trunk to erect position.

(3.) Half bend and turn trunk to the right, looking at right foot.

(4.) Bend trunk full downward.

(Repeat movements (1), (2), (3), and (4) three times, making sixteen in all.)

Musical Accompaniment.—“Come, lasses and lads.”

Note.—It is advisable to make two rolls to the left and two to the right.

EXERCISE XXXIV.

Breathing.

Position.—Sitting.

Breathing position.

Breathe-out.—Breathe-out by swinging in the ribs.

Movements.—(1.) Swing out the ribs.

(2.) Swing in the ribs.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

[*Note.*—Heart and Abdominal Table ends here.]

LEG TABLE (UPPER) (Exx XXXV.—XL.).

EXERCISE XXXV.

Leg Circling.

Position.—Shoulder support.

Legs crossed.

Left toe touching ground just in front of and outside of right foot.

Movements.—(1.) Circle the left foot outward and backward, so that left toe touches the floor just behind and outside right heel.

(2.) Circle the left foot outward and forward back to original position.

(Repeat movements (1) and (2) seven times, making sixteen in all. Repeat with right leg.)

Musical Accompaniment.—“Waltz.”

Note.—Raise the leg as high as possible sideways, keeping the toe pointing downward. Keep the body erect, avoiding a sway from side to side or a bending forward or backward.

EXERCISE XXXVI.

Knees Full bending with Wrist Support.

Position.—Front Rank.—Attention.

Hands on hips.

Rear Rank.—Attention.

Hands gripping wrists of front rank.

Heels raised.

Movements.—Front Rank stand fast.

Rear Rank.—(1.) Fully bend the knees outward, directing seat towards heels.

(2.) Straighten knees.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Ranks Change.—About turn. Rear rank becomes front rank, and repeat movements eight times.

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XXXVII.

Knee Bending (Passive).

Position.—Front Rank.—Shoulder support.

Damaged knee bent to its maximum.

Rear Rank.—Left hand on shoulder of front rank.

Right hand grasping ankle of damaged limb.

Movements.—(1.) Lower the damaged limb until the knee is straightened.

(2.) Bend up the damaged limb until the original position is reached.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Ranks Change.—About Turn. Rear rank becomes front rank, and the movements are repeated.

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XXXVIII.

Alternate Knee-Bending in the Lunge Position.

Position.—Rest position.

Raise feet and pivot on heels, turning to the left.

Lower feet when at right-angles to one another.

Place palms of hands in front of thighs.

Movements.—(1.) Bend the left knee.

(2.) Bend the right knee.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—Keep the body as erect as possible, and face left throughout. A change may be made by pivoting on the heels and facing right

EXERCISE XXXIX.

Leg Bending and Swinging.

Position.—Shoulder support.

(a.) Left leg slightly raised forward.

(b.) Right leg slightly raised backward.

(c.) Left leg slightly raised forward.

(d.) Right leg slightly raised backward.

(e.) Left leg slightly raised sideways (inward).

(f.) Right leg slightly raised sideways (outward).

Movements.—(a.) (1.) Bend up the leg backward to a right-angle.

(2.) Straighten the leg and assume the original position.

(b.) (1.) Bend up the leg forward to a right-angle.

(2.) Straighten the leg and assume the original position.

(c.) (1.) Swing the leg backward.

(2.) Swing the leg forward.

(d.) (1.) Swing the leg forward.

(2.) Swing the leg backward.

(e.) (1.) Swing the leg outward.

(2.) Swing the leg inward.

(f.) (1.) Swing the leg inward.

(2.) Swing the leg outward.

(Repeat movements (1) and (2) six times, making fourteen movements

in all. At the fifteenth movement bring heels together, and at the sixteenth take up the following position and continue till (f) is finished.)

Musical Accompaniment.—“March of the Men of Harlech.”

EXERCISE XL.

Thigh Turning

Position.—Shoulder support.

(a.) Left heel raised.

(b.) Raise the toes and place left heel where left toes were.

Movements.—(a.) (1.) Swing the left heel outward, keeping the leg straight.

(2.) Swing the left heel inward, keeping the leg straight.

(Repeat movements (1) and (2) seven times, making sixteen in all.

Repeat, using the right leg.)

Musical Accompaniment.—“Waltz.”

Movements.—(b.) (1.) Swing the left foot outward quickly, using the heel as a pivot.

(2.) Swing the left foot inward quickly, using the heel as a pivot.

Musical Accompaniment.—“The Vicar of Bray.”

LEG TABLE (LOWER) (EXX. XLI—XLVI.).

EXERCISE XLI.

Heels raising with support.

Position.—The leader of the rank places his hands on the back of a chair for support. The remainder place their hands upon the shoulders of the man in front of them, keeping the elbows semi-flexed.

Trunk erect.

Movements.—(1.) Raise the heels four inches.

(2.) Lower the heels four inches.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XLII.

Feet raising with support.

Position.—As in Exercise XLI.

Movements.—(1.) Raise the front of the foot as high as possible.

(2.) Lower the front of the foot.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XLIII.

Ankle rocking with support.

Position.—Same as in Exercise XLI., but with feet parallel and one foot length apart.

Movements.—(1.) Raise the inside of the left foot and the outside of the right foot as high as possible.

(2.) Raise the outside of the left foot and the inside of the right foot as high as possible.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—Get a maximum movement of the feet and a minimum swaying of the body. An excellent exercise for flat feet.

EXERCISE XLIV.

Alternate Ankle-Bending in the Lunge Position.

Position.—Rest position.

Raise feet and pivot on heels, turning to the left.

Lower feet when at right-angles to one another.

Place palms of hands on front of thighs.

Movements.—(1.) Bend the left knee.

(2.) Bend the right knee.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

Note.—This is practically the same exercise as Exercise XXXVIII. A difference can, however, be made, if desired, by allowing the heel of the bent knee to be bent in Exercise XXXVIII., but not in Exercise XLIV. The heel of the straight leg must in all cases be kept on the ground.

EXERCISE XLV.

Heels raising, Mark Time with feet closed, and with support.

Position.—Same as in Exercise XLI., but with feet closed and heels raised one inch.

Movements.—(1.) Bend the left knee outward and raise the left heel three inches.

- (2.) Bend the right knee outward and raise the right heel three inches, and at the same time straighten the left knee and lower the left heel three inches.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

EXERCISE XLVI.

Sideways Marching and knees bending.

Position.—Leader of rank in position of attention with hands on the hips, remainder as in Exercise XLI.

Heels raised one inch.

Movements.—(1.) A short side-step to the left.

- (2.) Heels raise three inches.

- (3.) Knees half-bend.

- (4.) Knees straighten and heels lower three inches.

(Repeat movements (1), (2), (3), and (4) four times to the left, four times to the right, four times to the left, and four times to the right, making sixty-four movements in all.)

Musical Accompaniment.—“The girl I left behind me.”

[Note.—Leg Table ends here.]

ARM TABLE (UPPER) (Exx. XLVII.—LII.).

EXERCISE XLVII.

Arms Circling.

(With heels raising and head backward bending.)

Position.—Attention.

Movements.—(1.) Arms swinging forward and upward, with heels raising and head (half) backward bending.

- (2.) Arms swinging sideways and downward, with heels lowering and head upward raising.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—Sixteen bars of a “Waltz.”

EXERCISE XLVIII.

Arms Circling with Assistance.

Position.—Front Rank. Attention. Outer hand on hip.

Rear Rank. Left turn (about two feet from front rank).

Left hand clasps left hand of front rank, making a loose butcher's hook.

Right hand on right hip.

Movements.—(1.) Circle arm backward.

- (2.) Circle arm upward.

- (3.) Circle arm forward.

- (4.) Circle arm downward.

(Repeat (1), (2), (3), and (4), then reverse twice, making sixteen movements in all.)

Musical Accompaniment.—“Come, lasses and lads.”

Ranks change. Front Rank, Right Turn.
Rear Rank, Attention.
Ranks about turn (to work the right arms).

Note.—Make the largest circle possible at the shoulder-joint, keeping the elbows straight throughout the movement. The rear rank does the work, the front rank performs the function of a machine.

EXERCISE XLIX.

Arms bending with resistance.

Position.—Ranks inward turn.

Left foot forward lunged (two foot-lengths only).
(The left feet of the opposing ranks should be in line and one foot apart.)
The left hands are gripped, making a butcher's hook, with the thumbs uppermost.
Elbows bent so that the clasped hands are close to the left shoulders.

Movements.—(1.) Stretch the left arm and bend the right.

(2.) Bend the right and stretch the left.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“O no, John.”

EXERCISE L.

Arms Bending (Active).

Position.—Attention.

Palms facing forward.

Movements.—(1.) Bend up left arm.

(2.) Straighten left arm and bend up right arm.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

Note.—This should be a quick and free exercise of the elbow-joint, and the fingers and wrist should be straightened throughout the movements.

EXERCISE LI.

Forearm Turning with Resistance.

Position.—Ranks inward turn.

Left foot forward lunged (the left toes of the opposing ranks should be touching).

Left elbow supported at the left side by the palm of the right hand.

Forearms parallel to the ground.

Left hands gripped, making a butcher's hook with knuckles of front rank uppermost.

Movements.—(1.) Turn knuckles downward (supination).

(2.) Turn knuckles upward (pronation).

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“O no, John.”

EXERCISE LII.

*Forearm Turning (Active).**Position.*—Attention.

Elbows close to sides and bent to a right-angle.

Palms facing upward.

Forearms parallel with the ground.

Movements.—(1.) Turn the palms downward (pronation).

(2.) Turn the palms upward (supination).

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

ARM TABLE (LOWER) (Exx. LIII.—LVIII.).

EXERCISE LIII.

*Wrist bending and stretching with resistance.**Position.*—Ranks inward turn, facing each other.

Left foot forward lunged (left toes of the opposing ranks should be touching).

Left hands gripped in butcher's hook, thumbs uppermost, right hand grips and steadies left wrist.

Movements.—(1.) Bend the wrist.

(2.) Straighten the wrist.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“O no, John.”

EXERCISE LIV.

*Wrist Bending and Stretching (Active).**Position.*—Attention.

Elbows close to sides and bent to a right-angle.

Forearms parallel to the ground.

Fingers closed with thumbs uppermost.

Movements.—(1.) Bend the wrists.

(2.) Straighten the wrists.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

EXERCISE LV.

*Fingers bending and stretching with resistance.**Position.*—Ranks inward turn, facing each other.

Left foot forward lunged (the left toes of the opposing ranks should touch one another).

Left hands gripped in butcher's hook, thumbs uppermost. Right hand grips and steadies left wrist.

Movements.—(1.) Straighten fingers.

(2.) Bend fingers.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“O no, John.”

EXERCISE LVI.

*Fingers bending and stretching (Active).**Position.*—Attention.

Elbows close to sides and bent to a right-angle.

Forearms parallel to the ground.

Fingers closed with palms uppermost.

Movements.—(1.) Open the hands as wide as possible.

(2.) Close the fists.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

EXERCISE LVII.

*Wrist circling (Passive).**Position.*—Ranks inward turn, facing each other.

Left foot forward lunged (left toes of the opposing ranks should be touching).

Left hands gripped in butcher's hook, thumbs uppermost, right hand grips and steadies left wrist.

Movements.—(1.) Circle wrist backward.

(2.) Circle wrist upward.

(3.) Circle wrist forward.

(4.) Circle wrist downward.

(Repeat (1), (2), (3), and (4), then reverse twice, making sixteen movements in all.)

Musical Accompaniment.—“O no, John.”

EXERCISE LVIII.

*Wrist circling (Active).**Position.*—Attention.

Elbows close to sides and bent to a right-angle.

Forearms parallel to the ground.

Fingers closed, with thumbs uppermost.

Movements.—(1.) Circle the wrists inward.

(2.) Circle the wrists outward.

(Repeat movements (1) and (2) seven times, making sixteen in all.)

Musical Accompaniment.—“Let the hills resound.”

[Note.—Arm Table ends here.]

DANCING POSITION.

Heels together and slightly raised, so that they are just clear of the ground, and the weight of the body is transferred to the balls of the feet.

Feet turned out to an angle of 45° (half a right-angle).

Knees slightly bent, not stiff nor sagging, but in a springy condition ready for action.

Hips neither retracted nor protruded, but in an easy upright position, forming a springy support for the pelvis and spine without any stiffness or sagging.

Abdomen neither retracted nor protruded, with the muscles in a condition of tonicity (a condition of readiness for action midway between contraction and relaxation).

Chest easily supported so that (1) the lower end of the breast-bone becomes the most prominent part of the body in front, (2) the normal curves of the spine are maintained, (3) the shoulders lie squarely upon the chest wall.

Fists placed upon the hips in a comfortable position.

Head gracefully poised, with the chin square to the chest and eyes directed forward to a point on their own level.

Body as a whole to be upright, with all the joints in a condition of springiness, and all the muscles in a condition of tonicity.

The Fundamental Laws of Artistic Movement.

Artistic movement depends for its guiding sensation upon the movement-feeling sense, the sense that enables us not only to feel the actual movement that we are doing, but also to know exactly the position of any part of our body in any phase of that movement; not only to feel the doing of the movement but also to become aware of the correctness of that doing, truly a most important eurhythmic sense. An inner sense that is developed by the "well-doing" of eurhythmic exercises (either with or without the aid of the outer senses). The sense that enables us to concentrate the whole of our attention upon the "doing" and the correctness of the "well-doing" to such an extent that the mere "ego" is subdued and self-consciousness disappears. The movement-feeling sense may be justly described as the sense of rhythm, for rhythm cannot possibly exist without it. It is dependent for its production upon a full consciousness of the movement itself, which includes a complete knowledge of (1) the purpose for which the movement is done, (2) the correctness of detail in the performance of that movement, (3) the artistic conception of the beautiful in movement—the poetry of motion. Full consciousness of movement involves, therefore, intellectuality and a thorough understanding of the sensing of "unit flowing into unit" and the sensing of "balance," in addition to all the fine inner senses, which make us aware of the power of giving due proportion to the time, force, and space values in rhythm.

The movement-feeling sense includes also the "sensing of co-ordination," the means whereby the maximum result is attained by the minimum of effort. This is productive of ease in movement, it is dependent upon Sherrington's law called the "reciprocal innervation of muscle." According to this law each muscle and even each individual strand of the muscle that takes part in the movement does just its allotted share of the work and no more or no less.

LIX.—EXERCISE FOR UNIT FLOWING INTO UNIT.

Position.—Dancing position.

Movements.—(1.) Left foot sideways place.

(2.) Right foot inward place, so as to assume dancing position.

(3.) Repeat (1).

(4.) Repeat (2).

(5.) Knees half bend.

(6.) Knees straighten.

(7.) Repeat (5).

(8.) Repeat (6).

(Repeat (1), (2), (3), (4), (5), (6), (7), and (8), moving to the right, beginning with right foot sideways place, making sixteen movements in all.)

Musical Accompaniment.—Eight bars of "The girl I left behind me."

Note.—It must be carefully impressed upon the performers that they must so time their movements throughout that one movement is completed just in time for the next to begin, so that there is no pause between the movements, and from the beginning to the end of the whole series movement is going on, the only change being one of direction similar to the

swing of a pendulum. Due attention must be paid to the exactness of the beginning, the end, and the carrying out of the individual movements, as well as to the correctness of the sequence as a whole in strict time with the music.

LX.—EXERCISE FOR “BALANCE.”

Position.—Dancing position.

Left foot sideways placed.

Movements.—(1.) Raise the right heel to its fullest extent, allowing the body to sway to the left.

(2.) Raise the left heel to its fullest extent, allowing the body to sway to the right.

(Repeat movements (1) and (2) seven times, making sixteen movements in all.)

Musical Accompaniment.—Sixteen bars of a Waltz.

Note.—Carefully explain that according to the law of “balance” the centre of gravity of the body must always be poised exactly over the centre of the base of its support. In this exercise the centre of the base continually alters with the raising of the heel, consequently the centre of gravity of the body must be gradually adjusted throughout the movement. The minds of the performers must be concentrated upon the alternate raising of the heels, and the body allowed to sway to preserve its proper poise unhampered by any stiffening of any part; all moving joints must be in a condition of springiness, and all working muscles in a condition of tonicity. It is useful to test the balance at the end of each movement, by asking the performers to take the foot with the raised heel from the ground. If this can be done easily the centre of gravity of the body is exactly over the centre of the supporting foot. If the foot flies up the body has been swayed too far over. If the foot cannot be raised, the body has been swayed over too little.

The raising of the alternate heels must be made in strict time with the three beats of each bar, and it is good practice to make the class count one, two, three for the raising of each heel in turn. This might be preceded by insisting upon a count being made of the bars of a Waltz-tune, and then of the individual beats (one, two, three) of the bars being counted aloud; it makes for a fuller practical understanding of the time-value in rhythm, and so aids the correct spacing out of the movement.

LXI.—EXERCISE FOR “CO-ORDINATION.”

Position.—Left foot forward lunged.

Left knee half bent.

Right leg straight.

Left fist on left hip.

Right hand backward and half upward raised behind the body.

Palm facing forward and upward.

Eyes directed to right hand.

Movements.—(1.) Move the straightened right arm upward until it is in line with the right ear. Keeping the arm in line with the ear, lower it forward and downward by slowly bending the trunk and neck as far as possible. Continue the lowering of the arm until the finger-tips of the right hand touch the toes of the left foot.

(2.) Raise the right arm upward until it is in line with the right ear.
Keeping the arm in line with the ear, raise it forward and upward by slowly straightening the trunk and neck. Continue the movement of the arm backward to the original position.

(Repeat movements (1) and (2) three times, and then by changing hands and feet repeat four times, making sixteen movements in all.)

Musical Accompaniment.—“Bonnie Dundee.”

Note.—The eyes should be directed upon the moving hand as far as possible throughout the movement, so that the body is turned as well as lowered. The advanced knee must be kept half bent all the time, and the rear leg straight. The exercise must be done as easily as possible.

THE “WALTZ” MARCH.

(Heels raised just clear of ground, so as to get weight on balls of feet.)

Position.—Attention.

Fists upon the hips.

Feet turned out to half a right-angle.

Movements.—(1.) Left foot advanced forward with toes turned out as in position of Attention.

(2.) Right foot advanced forward with toes turned out as in position of Attention.

(Repeat movements as required, forward and then backward.)

Musical Accompaniment.—“Waltz.” A bar to each movement.

Note.—The weight of the body should be transferred to the advanced foot by raising the heel of the back foot. The body should be so inclined that the tip of the nose is directly over the big toe of the advanced foot, the relative parts of the body being kept in the position of attention without any stiffness; this will ensure a considerable sway of the body forward and sideways. The eyes should be directed to a point on their own level in line with the advanced foot; this will ensure a turn of the body sideways.

The movement of advancing the foot forward, of raising the back heel, of transferring the weight of the body by swaying forward and sideways, and by turning sideways, must all be done in strict time with the music, which should be in slow waltz time. Count three to each bar, and raise the back heel one inch to each count rhythmically.

It is advisable to practise the sway as a balance exercise before attempting the “Waltz March.”

Position.—Attention.

Left foot forward placed.

Movements.—(1.) Sway body forward to the left front by raising the right heel.

(2.) Return to upright position, lowering the right heel.

(Repeat movements (1) and (2) seven times, making sixteen movements in all; change feet, and repeat to the right.)

Musical Accompaniment.—Thirty-two bars of a Waltz.

Note.—The sway to be in strict time with the music. Introduce the turn of the body in the forward placed position by swaying to the front as well as to the side.

MUSICAL TABLE.

The following musical accompaniment of the series of exercises tabulated on page 140 *et seq.* is intended mainly to suggest a method of using national tunes and of piecing them together. The steady, unvarying, rhythmic style of the harmonization is adopted by design, experience having shown the need of strongly marked rhythmic leading from the pianoforte. As the pianist will generally play *forte* and *sempre sforzando*, no expression marks or phrasing have been given.

EXERCISE XIV.

"MARCH OF THE MEN OF HARLECH."

EXERCISE XV.

"GOLDEN SLUMBERS."

EXERCISE XVI.

"THE VICAR OF BRAY."

Musical notation for Exercise XVI, "The Vicar of Bray." The notation is divided into two systems. Each system contains two staves. The top staff uses a treble clef, and the bottom staff uses a bass clef. Both staves are in common time (indicated by a '4'). The key signature is one flat (B-flat). The music consists of eighth-note chords and eighth-note patterns.

EXERCISE XVII.

"BELIEVE ME IF ALL THOSE ENDEARING YOUNG CHARM'S."

Musical notation for Exercise XVII, "Believe me if all those endearing young charms." The notation is divided into two systems. Each system contains two staves. The top staff uses a treble clef, and the bottom staff uses a bass clef. Both staves are in common time (indicated by a '6'). The key signature is one flat (B-flat). The music features sixteenth-note patterns and eighth-note chords.

EXERCISE XVIII.

"EVERY MAN TAKE HIS GLASS."

Musical notation for Exercise XVIII, "Every man take his glass." The notation is divided into two systems. Each system contains two staves. The top staff uses a treble clef, and the bottom staff uses a bass clef. Both staves are in common time (indicated by a '6'). The key signature is one sharp (F-sharp). The music features sixteenth-note patterns and eighth-note chords.

EXERCISE XIX.

“BONNIE DUNDEE.”

Musical score for Exercise XIX, featuring two staves of music in common time (indicated by '6/8' with a '2' over it) and a key signature of one sharp. The first staff uses a treble clef, and the second staff uses a bass clef. The music consists of eighth-note patterns and some sixteenth-note figures.

Continuation of the musical score for Exercise XIX, continuing the two-staff format in common time (6/8, 2) and one sharp key signature. The music includes eighth-note patterns and sixteenth-note figures.

EXERCISE XX.

“CHARLIE IS MY DARLING.”

Musical score for Exercise XX, featuring two staves of music in common time (indicated by '2/4') and a key signature of one flat. The first staff uses a treble clef, and the second staff uses a bass clef. The music consists of eighth-note patterns and some sixteenth-note figures.

Continuation of the musical score for Exercise XX, continuing the two-staff format in common time (2/4) and one flat key signature. The music includes eighth-note patterns and sixteenth-note figures.

Final continuation of the musical score for Exercise XX, continuing the two-staff format in common time (2/4) and one flat key signature. The music includes eighth-note patterns and sixteenth-note figures, with a measure number '3' above the third measure of the top staff.

EXERCISE XXI.

“EARLY ONE MORNING.”



EXERCISE XXII.

“THE ASH GROVE.”



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